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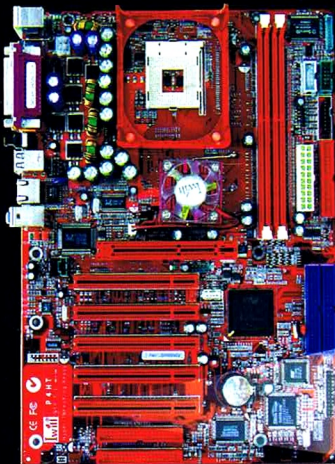
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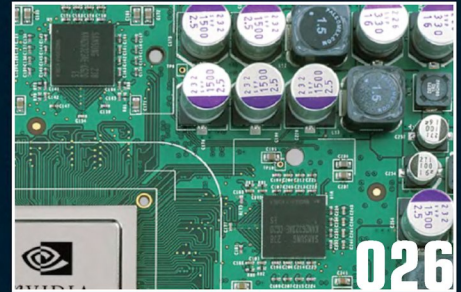
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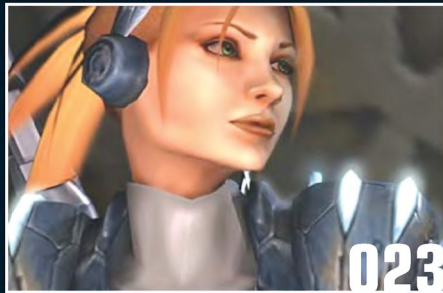
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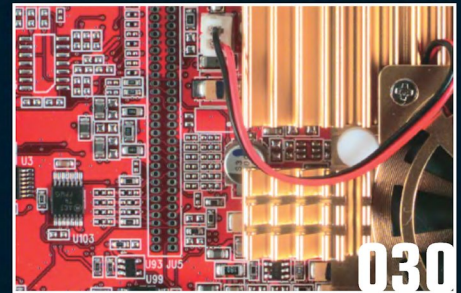
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It's just a sk8r b0x – could he make it any more obvious?

GEAR BOX

020

Fluoro spinny bits to tart up your box good and proper, like. One can never over-accessorise.

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First perve: Black & White 2, Racing Evoluzione, StarCraft Ghost, Praetorians and Raven Shield.

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Off the shelf systems have come lightyears in just the last two years. We Lab-test the best that you can buy.

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Funkalicious Xmas booty – like the complete 7-CD Vice City soundtrack, mountains of games and cool stuff.

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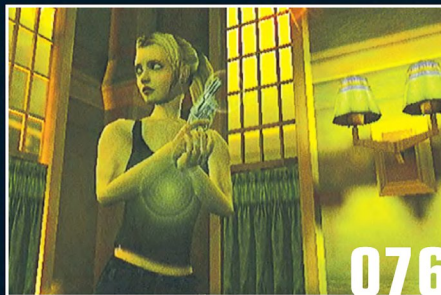
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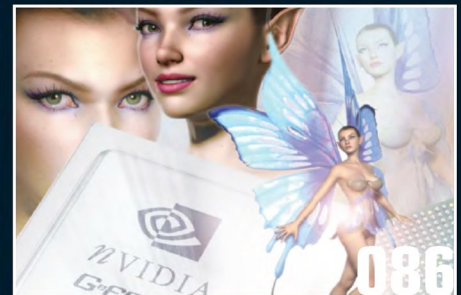
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We love computers mostly because they do weird shit that we don't understand, but really want to.

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This month in our letters page we've attracted the attention of a woman in great *Atomic* need.

PHR33X TW33X

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Atomican know-how put to the test and chucked right on back at you.

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Win a GeForce FX! No way? YES WAY! We score an NV30 for you before they even exist yet!

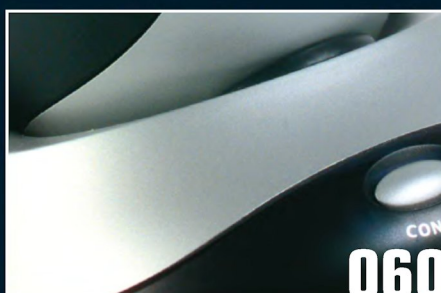
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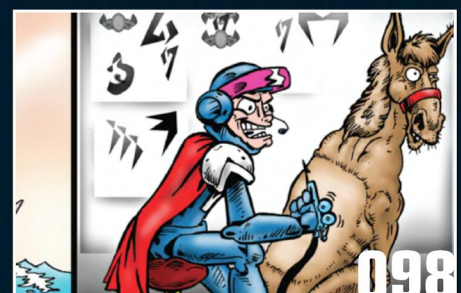
Genetic engineering is pretty cool.



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Off the shelf hot boxes

Standing majestic amid a torrent of sublimated dry ice, the shiny PCs on our cover are but some of the many that make up our roundup this month. We like to gather together products of a like, and throw them against each other, super-collider style, to see which one is the fastest. Or hottest. Or coolest. But in the past the things we've collided have been components.

Because that's what we're into, mostly.

We've tested about a thousand (feels like it) heatsink fans, the same number (I'll just give in to exaggeration) of CPUs and graphics cards, sound cards, empty cases, motherboards. . . everything, really. As a happy result, you know what the best bits are. You then buy those bits and strap 'em on.

Thus is the way of the Atomican. When we started doing this, we'd accompany many reviews with smarmy comments like 'suck on this here Aluminium glory, you ugly little beige turd!'. Well, it seems the beige turd reads *Atomic* too, because we're seeing pre-built systems bear an ever increasing resemblance to the regulation hot box.

First, they came in Aluminium. Just like we do. Then the cables started getting tucked away, then advertisements starting listing proper graphics cards instead of '32MB AGP Graphics'.

The shift was the transformation we have been demanding for. . . ever. PCs have always been carefully designed so they'd be able to sit in between an office printer and a photocopier, and blend in stealthfully.

And that sucked! The only real choices we had were Packard Bells with stupid looking translucent purple bits, or a NeXT – which is still one of the most bad-arse PC designs ever, but was always, much like Steve Jobs, a big wank making a style statement rather than offering genuine usefulness. Real home-built hot boxes will always have the edge, but finally system integrators have caught on. They are combining true performance with aesthetics and strapping it all together with an impressive care for detail and build quality.

These systems are a killer purchase for the lazy performance freaks among us. They're also a great head-start system for modders to take to the next level.

So, we figured that we were nothing less than obliged to haul them together and subject them all to the super-collider testing thing.

Interestingly, we invited almost three times as many companies as eventually submitted boxes. That so many companies declined is something we can only interpret one way: that the bells and whistles on paper don't measure up in the real world.

Hence, the ones that did arrive for testing came with the faith of the builders, which we like.

Submitting them to the stress test put Bennett through some stresses, as we found more than a couple of unexpected giggles. As one sometimes does. The results do show that professional system builders truly know their stuff. They also show that they aren't afraid to make them look the part too, just how we like it.

Ben Mansill, Editor



atomic

MAXIMUM POWER COMPUTING

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Printed by PMP Print. Distributed by:

Gordon & Gotch Australia (03) 9805 1650

Gordon & Gotch New Zealand (09) 625 3005

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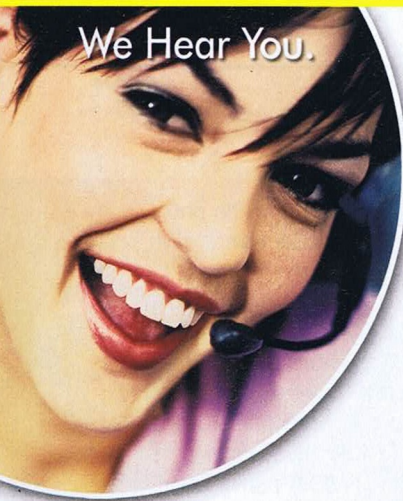
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Short Circuits

AMD, the chipmaker we pray to just before we go to sleep, has hit hard times. Its dwindling profits are the result of a general slump in the computer market and lost sales to competitor Intel. The company has been cost cutting, mainly by letting employees go. Rather than staying on the defensive, AMD has been aiming to diversify, and to expand its influence into the 'consumer-centric' market, as opposed to developing 'technology for technology's sake.'

AMD's Chief Executive Hector Ruiz believes the company's strategy of making chips smaller, faster and more efficient is stagnating business. Instead, the company wants to spread its resources, and start selling products for the 'networked home.' The company will also seek to work with a variety of companies to help sell its hardware.

A Hewlett-Packard advertising campaign will see the company projected to consumers as a 'one-stop-shop' for all their needs in this regard, and Microsoft will be pushing its vision of the home PC being the 'central hub' of the household. At the moment, we can't discern whether this is the best move for AMD. However, if the company can make a profit by diversifying in this way, it will be reflected well in the processor arena.

P2P networks are under review at US colleges after several entertainment industry organisations complained about theft of copyright material to tertiary campuses in the USA.

One Naval Academy in Maryland responded by seizing over 100 computers from its students suspected of trading files and threatened the trainees with penalties ranging from loss of leave to court-martial.

Surely, if anyone needs pOn, it's our seamen?

RAMBUSTed

RDRAM continues its quiet death as a consumer technology with a major milestone in the move away from RDRAM by once fanatical supporter, Intel. With potential saviour SiS still to release its RDRAM-supporting 655 chipset for the Pentium 4, this month marks the launch of Intel's performance memory replacement for RDRAM.

In place of the oft-maligned proprietary signalling technology is common old PC2100 DDR-RAM, running in a dual channel configuration to match the 533MHz FSB of current Pentium 4 chips. At the moment this is only available in the workstation-focused e7205 (formerly known as Granite Bay) chipset but is due to go mainstream in 2003 with the release of the desktop chipset currently codenamed Springdale.

Hot rumours are emerging that Springdale will bring a big change in the Pentium 4's frontside bus. The specs for Springdale have allegedly been redefined to support PC3200 DDR, aka DDR400. It's yet to be ratified as a standard but is supposedly needed to match the bandwidth of Pentium 4 CPUs running on an 800MHz FSB. Despite suggestions of an appearance in the first half of 2003, it is unknown when such a bus will be introduced.

It may not be seen until the next Pentium 4 core, the 90 nanometre strained silicon Prescott, hits the market late 2003.

COMD-ex?

The once omnipotent world tech trade show COMDEX showed again this year that it is in danger of losing relevance in the global marketplace. Taiwan's Computex is inarguably the number one global tradeshow nowadays – it's said that if COMDEX remains relevant it's thanks to its support by American firms.

Very little set the world on fire in 2002: Microsoft prefaced COMDEX by launching its new Tablet PC concept; NVIDIA paper launched the NV30, calling it GeForce FX and disappointing everyone who hoped to never see the GeForce name again; AMD again showed off Hammer, gave it a real name and reiterated that despite the abundance of motherboards ready for a 'Hammering', the CPU was still a way off; and Transmeta announced its next generation notebook chip, named Astro.

While each is a significant announcement in its own right, collectively they lacked the earth-shattering nature of previous COMDEX launches.

Gone are the days when COMDEX seemed to bring a significant change or new technology every year, so while the event survived this year (organiser Key3Media has had big financial troubles in the last 12 months), it may be the last gasp. It is an unfortunate side effect of the global PC downturn and shift towards Asia as a centre for technology globally – plus, Las Vegas no longer has the hold it once had over the hordes of silicon-hungry geeks worldwide.

Perpendicular gigabytes

Are you storing your data longitudinally? Chances are that the answer is 'yes' – unless you're a mutant from Pluto, in which case you probably have a phosphorous data crystal capable of storing kiloquads of your special 'alien' information. Probably involving probes.

Longitudinally is a cool way of recording stuff, just not as cool as perpendicularly. Sometime in the near future, we may store our bits on-end, using Seagate's new breakthrough in perpendicular recording, which will hopefully revitalise the rapidly-becoming-insufficient way of doing things lengthwise.

The technology isn't new: it was first thought up 25 years ago. In 2000 Hitachi developed an implementation of the technology that allowed for an areal density of 52.5GB/in². The reason this was such an achievement back then was that until the demonstration perpendicular recording had not been able to achieve anywhere near the same areal densities as longitudinal recording.

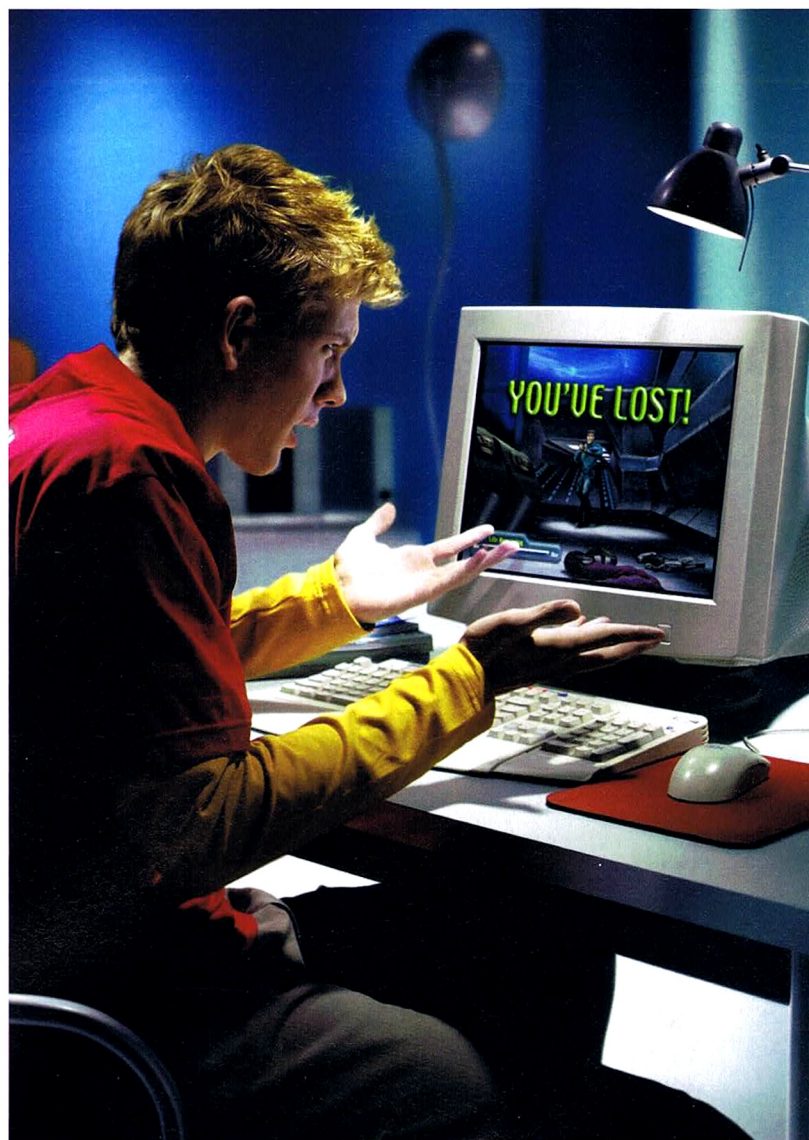
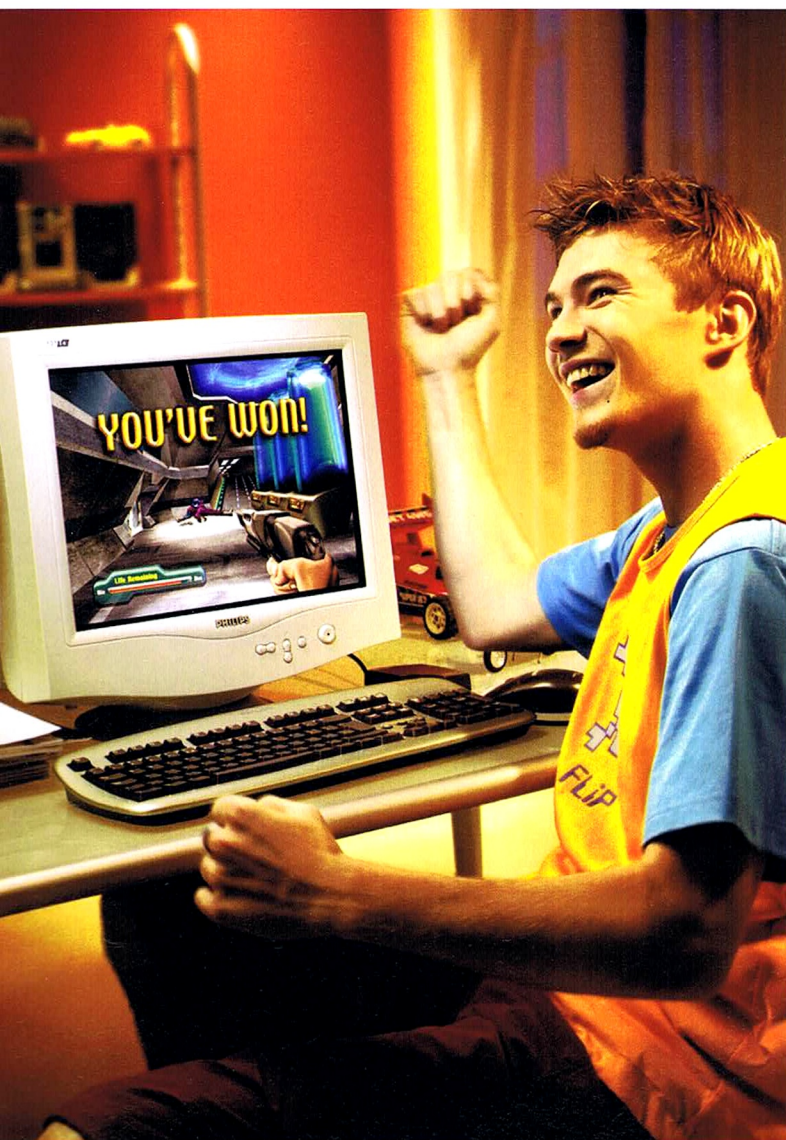
Seagate's method has improved on this with its method allowing areal densities of 100GB/in² and more. At the moment, the speed differences between the two types of technology are comparable, however longitudinal recording will not be able to keep pace with perpendicular recording as the technology matures.

Seagate's Senior Vice-President of Research, Dr Mark Kryder, predicts that the technology won't be limited to just gigabytes, 'Perpendicular recording is projected to achieve areal densities as high as one terabit per square inch (TB/in²),

roughly 20 times the density of today's state-of-the-art disc drive products.' A terabyte of hard drive space sounds funky indeed – and the tech isn't just limited to a single terabyte. There could be a few more squeezed in from time to time.

Among other benefits, perpendicular recording should also see the extension of the super paramagnetic limit that longitudinal drives are fast approaching. However, until this limit is reached, there is no overwhelming need to implement the new technology for a few years yet. So, for the time being, don't go hunting around your local computer haunts.

That said, we can expect new drives that make use of the recording technique to appear sometime in 2004.



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Short Circuits

◀ Clawhammer has finally latched onto a proper name. While we agree that Clawhammer is an awesome title, AMD has come up with a better, more original, and definitely not confusing moniker for the desktop processor: Athlon 64. You heard right. The new chip will be named after its predecessor, albeit with the addition of a '64' tag. Could this be the sign of a new suffixal bandwagon? We have only just left (or maybe we are still in) the days where everyone had the burning need to pimp products with the XP labelling. Hardly any piece of hardware or software survived 'unmarked'. Thankfully, this extra title meat does have some significance, and denotes the 64-bit computational capacity of the new processor. So things won't be so confusing. Maybe.

◀ Black holes suck. (OK, an apology is *probably* in order.) Scientists have proof of the existence of two supermassive black holes, after NASA's Chandra X-ray Observatory spotted the couple in the galaxy NGC 6240. These suckers are big, and will eventually combine a few hundred million years from now, to create one gigantically huge black hole – accompanied by oodles of intense radiation; not the type that affected the Fantastic Four, but the type that disintegrated Sarah Connor in *Terminator 2*. The reason this is spectacular is because both holes are in the same galaxy. That they could be seen at all is thanks to the accretion disks that had formed around the holes. An accretion disk is a mass of swirling matter caught in the gravitational hold of a black hole. These things already pump out loads of X-radiation, which is how they were sighted and confirmed by the presence of the disks – so their marriage will certainly be an interesting event on the horizon.

GeStrap Quadro4

You should have seen the smile on Bennett's face when he got wind of this – although it's a look that is more homicidal than happy, we knew he was satisfied. . . in some way.

Anyway, this little wad of news fits nicely as a follow-up to his *Head-to-Head* from *issue 22*. In case you can't cast your mind back that far (it's only two issues ago!), it featured Bennett, some pro 3D video cards, a few benchmarks, a couple of screenies and a few tears. . .

Well, we hope you got a little emotional about it. If you didn't, you might now, as you can now transform your GeForce4 into a Quadro4. Before this software option, only some transistor and soldering foreplay could convince your NVIDIA darling that it was in fact a piece of high level 3D silicon. Additionally, it had to be a pre-GeForce4 card, and in most cases, an MX variant.

Well and truly gone are those days (unless you have a steady hand, or lots of money to blow on video cards), with programs and utilities such as RivaTuner and SoftQuadro available to us.

So, you're probably asking how exactly this relates to Bennett's piece (no, not that piece). In the H2H he mentioned that ' . . . NVIDIA has quashed these cost saving shenanigans. . . making it impossible to modify the GeForce4 into a Quadro due to hardware differences'.

This is no longer the case, as SoftQuadro4 will remedy this situation for you. However, it isn't as simple as just applying the patch and getting on with some 3D design. Wouldn't be *Atomic* otherwise.

The patch works to circumvent the PC DeviceID of the video card – the ID that identifies the card as a GeForce4 or Quadro4 (and all the other NVIDIA cards).

This circumvention is accomplished with the NVStrap driver that accompanies the RivaTuner program. It loads up when Windows starts, but before the kernel loads, and reprograms the PCI DeviceID.

You'll need to do a manual install of your display drivers before this though, and it's recommend (and in fact a requirement) that you use a driver revision above 30.82s (you can use the 30.82s as well).

<http://nvworld.ru> has all the information you need. Read the instructions carefully – you can't blame us if you damage your card! ◻

Atomican

Spring is the season of love, and like sands through the hourglass, what would our forums be without some kind of soap opera moment each month? Well that certainly seemed the case in the Couple Registry thread (www.atomicmpc.com.au/forum.asp?cat=ge&top=71706). It just goes to show how dynamic the *Atomic* community really is. Even though the forums and IRC channel were primary created around the magazine, the community has grown enough to be a separate entity, even warranting this column!

So good is the community that's been created, that it has become the envy of the rest of society. It's even at the stage where Atomicans aren't safe to leave their houses without being victimised and having their chocolate baked goods stolen! (www.atomicmpc.com.au/forum.asp?cat=ge&top=69909) Don't worry Lord_Ben, once Atomicans take over the world, you'll be able to have all the chocolate muffins you want.

For all those Atomicans thinking about upgrading their video card to the latest and greatest, Argun and others have created a comprehensive price watch of where you can find the cheapest video cards in any chipset. Send your browser in the general direction of www.atomicmpc.com.au/forum.asp?cat=gs&top=65660 to see their top work.

With the strange sense of déjà vu with 2's new ADF thread, (www.atomicmpc.com.au/forum.asp?cat=ge&top=71784 and www.atomicmpc.com.au/archives.asp?a=Sep01&cat=ge&top=1314) it conjured memories of Atomicans of the past who are missing in action for some reasons or another. Aurak, accessdenied, holero, Bob, Aquilae, dna, djmorgan, nm, pbkg, frozen pea, vOid, and zainny are just a few of the Heroes that are MIA. Where are they now?

Guys, you're part of what *Atomic* is today. Come on back and show the new breed how it's done.

Part of the main site which many people may not know about is the links page, where Atomicans' personal pages are listed for easy access. Atomicans' pages are as wide ranging as the topics we discuss. Surf over to www.atomicmpc.com.au/linkage.asp for some linkage action.

And remember, to all Atomicans, may you have a happy and prosperous Christmas, a safe New Year, and gratitude that we don't have to worry about the Y2K+3 bug.

WHAT'S HOT

- DDR266 – P4 Performance saviour
- GeForce FX – NVIDIA strikes back
- Tony Hawk 4 – Skating perfection
- Serial ATA – The future has arrived
- MX mouse – Mouse reinvention

WHAT'S NOT

- PC1066 RDRAM – Out of its misery
- 3dfx – Completely assimilated
- 720° – Skating sentimentality
- Parallel ATA – Bye bye ribbon cables
- GeForce4 MX – GeForce2 rehash

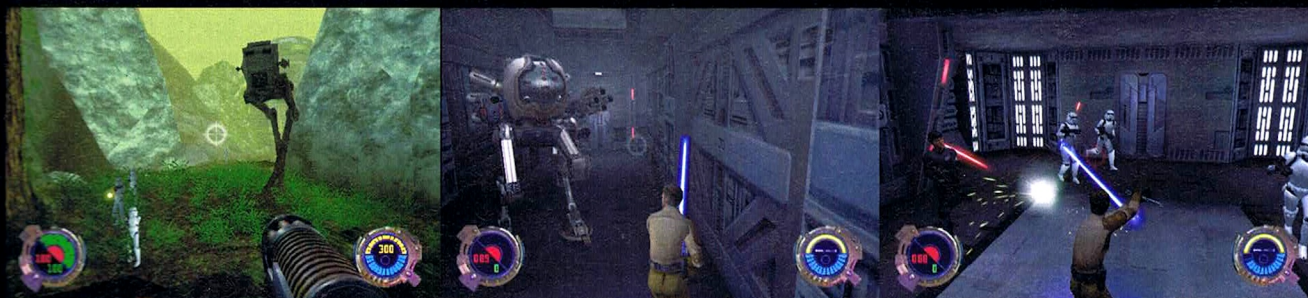
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23319 JEDI.ATOMIC



A different point of view

Two heads are better than one, the axiom goes. So what, then, asks Ashton Mills, is possible with millions?



I find it fascinating that one of the most important sociological developments in our society has spawned from the technology you and I love. Surpassing its original military design, the Internet flourished on the basis of the free sharing of ideas and information – first a vessel of science before commerce – and has in turn spurred a revolution that recognises the sharing of knowledge is power.

With global expansion comes commerce, and with commerce comes control. I've written plenty already about the changes slowly happening in the way we live due to multinational companies controlling the distribution and operation of the products we use. Commerce

'If the Internet had been a commercial venture from the start, it would never have been as powerful or large or useful as it is today.'

online is a good thing, to be sure, but rather than have the freethinking ideals that built it continually crushed under the boot of profit, it should be the free-thinking ideals that keep commerce in check. It may be a while before we learn this, but liberties are often lost before they are appreciated.

If the Internet had been a commercial venture from the start, it would never have been as powerful or large or useful as it is today – the failures of AOL and MSN are testament to this theory. Not that they'll give up trying because – to turn my own phrase – with control comes commerce.

And we're conditioned to think so. Are there ways to make money without control? When I first heard of open source as a development philosophy I thought it absurd. You mean you give it all away *free*?

But now, after having used and written about open source software for a number of years, the reverse is true. For many applications, closed source software development doesn't make sense anymore. As a development model, it can't compete.

Microsoft would have you believe that commercial development is the key to innovation, but how can you innovate without sharing? When profit is first, progress comes second. Microsoft feels so threatened by what open source has produced, not because open source products merely compete with its own, but because the underlying philosophy that created them is the antithesis of the ideology upon which Microsoft's empire is built.

No one owns it, so Microsoft can't buy or sell it. No one controls it, so Microsoft can't control it. And in the marketplace, Microsoft has to compete with a price point of free. Open source is the biggest threat that company has

ever had to face.

In response Microsoft spreads FUD (Fear, Uncertainty and Doubt) about open source software and attempts to control the borders where open source and commercial software interoperate. If Microsoft can force its clients to use certain proprietary protocols, for example, then it will lock out open source software that doesn't have access to the protocols until such a time they can be reverse engineered.

At the same time Microsoft attempts to create its own form of open source, called 'shared source', where it gains the benefit of the peer review system that makes open source so successful – and it does this without giving programmers the option of using the code they see.

Which is a pity. And it's missing the point. There is a place for closed source software just as there is a place for open source software. The world needs both – it all depends on the application. And this is what I find fascinating: as a development model the possibilities of open source are starting to sink in across a whole range of applications,


and not just in software.

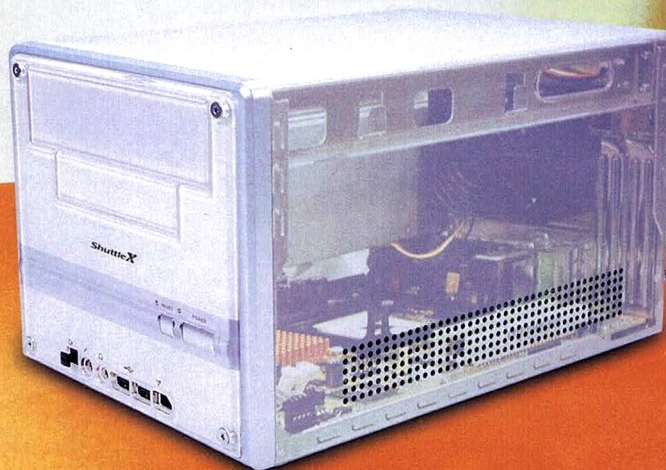
Recently the German government commissioned a completely open source office suite to be written for Linux, and this got me thinking. With the prominence of computers these days in Western society the basic software that all computers come with should be open source and free – imagine you buy a PC from a shop and it comes with an operating system and basic applications (email, Web browser, etc) at no additional cost. I don't mind whether this base is Linux or Windows or something else, but I think buying a PC without an OS, or paying extra for the OS, is like buying a car without an engine, or paying extra for an engine. It is, after all, a useless device without one.

We pay taxes for basic staples of living in our society. While PCs aren't exactly necessary for most, I think government-sponsored software is a good thing. The people pay for its development, and everybody gets to use the product.

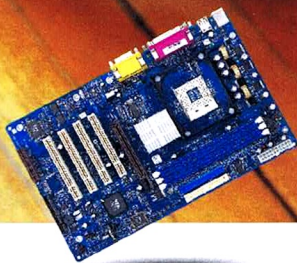
Using the open source model, governments around the world could collaborate and build a standardised operating system whose source is available to all, thereby allowing programmers full access to how the operating system works – a common complaint often aimed against Microsoft with its APIs.

There's plenty of competition in the market place, but the OS is not controlled by anyone, and there can be no monopoly on its implementation. Everyone benefits: new PC buyers and current users get a powerful OS developed by a whole *world* of developers free, programmers have full access to the inner workings and can add to and improve the OS for their benefit through the open source model in addition to commercial ventures, and a booming market for software builds on a level playing field.

It's time to think outside our traditional models. There is power in sharing, and there are plenty of areas where the open source model can be a boon to both society and business. And when that happens, everybody wins. 

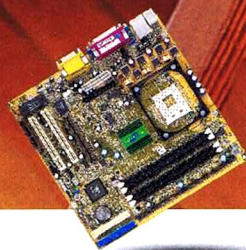


Power Your Brain, Perfect Your Life



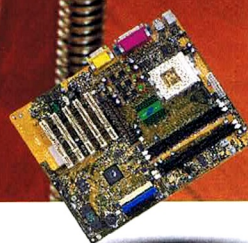
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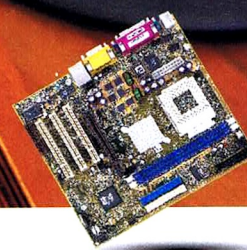
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Red arse fury

They're massive. They're multiplayer. They're role playing games. And they make Tim Dean mad as hell.



I'm furious. Bloody furious. I'm a seething pit of fury the likes of which even Garry Kasparov has never felt, even after losing a chess game to an oversized pocket calculator.

More livid than Genghis Khan when the 'roids flare up. More enraged than Jake the Muss after a night on the piss. More irate than John McEnroe after a poor line call.

If I was in the Dragonball Z world, I'd be covered with yellow flames, my hair would be standing on end, rocks would be flying up in the air and windows would shatter for miles around.

What am I so incensed about? Massively multiplayer online role playing games (MMORPGs).

'I remember acquiring a pick axe and standing next to a cliff face and mining for ore – for hours. Whoa, what a way to spend US\$9.95 a month.'

They make me angry.

Now, let me start by saying that I have nothing against MMORPGs in principle – it's just that they shit me to tears sometimes.

I fully understand that many people enjoy MMORPGs. In fact, as of July 2002, Everquest had more than 430,000 active subscribers. Hey – more power to 'em. Not for me though.

One thing that bugs me is the fact that in game, you're just another adventuring whacker among a field of other adventuring whackers.

Furthermore, especially when you start playing, just about everyone in the entire world is, like, infinitely stronger than you. They're all heroes – the result of which leaves you feeling a little insignificant in the scheme of things.

I know you build in your power, but even when you're powerful, there are still many more individuals who are far more powerful.

Now, while this seems a small point in terms of gameplay, it can have a significant impact on someone's experience and enjoyment of playing the game. Think about all single-player

games. In them, you are special. You are the protagonist. You are the hero. In fact, think about all the books and films you have seen. In them, there are one or just a few protagonists. By reading the story or watching the film, you experience their lives by proxy.

Even if they are not particularly special in that world, typically their experiences are extraordinary – otherwise it'd be a pretty boring book or movie (I know, I know – there are plenty of arty books and films that don't follow this formula, but I'll conveniently ignore them for now).

So, for me at least, it felt funny playing something where I was neither the protagonist, or special. Even if I

enjoyed the experience of playing, I subconsciously knew that when I logged off, the world would keep on chugging just fine without me, thanks for asking.

A few years ago at the first Australian Games Developers Forum, I asked the developer of an upcoming MMORPG what they thought about this, and what they were doing to make the player feel in any way special or like a hero. He had no reply other than to say that they believed players were having enough fun just being a part of the whole. Well, not me.

Another thing that annoyed me about Everquest and Ultima Online was the fact that when you start, you are almost completely inept at everything. I remember playing Everquest when it first came out.

When I started, as Wally the Wood Elf or something, I noticed that my skill in tailoring started off as Awful. I then proceeded to practice, practice, practice, and eventually I improved. To Feeble. . . Woohoo! Oh, the sense of accomplishment. . .

In Ultima Online, I remember acquiring a pick axe and standing next

to a cliff face and mining for ore – for hours. Whoa, what a way to spend US\$9.95 a month.

Another problem I have, and one that was rampant in UO, was PKing (player killing). See, I reckon it makes sense to allow the killing of other players. It adds to the role playing aspects in certain situations.

On the other hand, let me tell you a little story. After tooling around in the 'safe' areas for a while, I thought I might wander the countryside. I was strolling through a field just outside of town, minding my own business, when I spotted two heavily armoured chaps, with names like m3g4-ki113r and d3thlOrd, loitering around a farm house.

As I didn't like the look of them, I turned away. Unfortunately, they spotted me and a pursuit ensued.

Given that they were, like, level 20 million, and I was, like, level 3, they caught me, and slaughtered me in a matter of moments. When looting my body, they even laughed to each other that I only had on my person about four gold, a bag of rocks, and a pick axe.

They walked off, leaving my dead body in the middle of a field, and they didn't even bother stealing any of me meagre possessions. I logged off, and never played UO again.

The final thing that gives me the red arse is the fact that with so many MMORPGs coming out, the community will be split between them, and we're unlikely to have many in future that have the same kind of participation as that of Everquest, which will thin out the gameplay somewhat.

So, in sum, my experience with MMORPGs so far has been less than stellar, and my confidence in them as a genre is about as low as leaving a bag of prawns in a safety deposit box for a month and a half.

Given that, I am immensely looking forward to Star Wars Galaxies, and I have high hopes for it as a game and for it to restore my faith.

Tough ask, but as much as I like the fury, it would be good if I could stop breaking windows whenever I think about MMORPGs.

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LCDs, CRTs and geese

Is your CRT monitor still set on 'lck' mode?

Let Dan Rutter talk you out of buying an LCD.



People like LCD monitors.

People are idiots.

The above two statements are not connected. Well, not *necessarily*. You're not an idiot just because you like LCD monitors. If someone's dropped several hundred bucks on a new monitor simply because they didn't know to click your mouse seven times, though, then I think they're not going to think too highly of their own intelligence when they find out.

There are, of course, some perfectly sensible reasons to like LCDs.

If you want a monitor that takes up very little space, then an LCD beats the heck out of any CRT monitor.

Old long-tube CRTs can be truly enormous, but even modern short-tube

on which pixels fall as they may; they have a square grid of actual hardware pixels, each one made out of three little subpixels – one red, one green, and one blue. So they can't help but have perfect geometry all the time.

Funnily enough, though, the reason why a lot of LCD-lovers say they're keen on their screens isn't listed above. Apparently, it's simply that LCDs are plain nicer to look at.

'That old CRT gave me eyestrain,' they say.

'The new LCD doesn't,' they say.

This makes me suspicious.

See, the image on even a top-class LCD monitor is, in some quantifiable ways, inferior to the image on a CRT.

I'm thinking they were just running their CRTs at a 60Hz refresh rate. That's what I'm thinking.

I'm thinking this because, over and over and over, I sit down in front of someone else's Windows box, say 'lck!', and immediately open Display Properties to set the refresh rate to something other than the maximum-compatibility 60Hz default.

Not everybody's computer has this problem, and it's certainly not just the propellerheads who know how to change the refresh rate. But lots and lots of people just don't seem to notice.

Maybe they set a good refresh rate at some point, but then Something Happened (fill in the random Windows-confusing event of your choice here), and Windows flopped back to 60Hz on the next boot, because now it believes it has a Default Monitor, or whatever.

Then again, lots of people never set their monitor up properly in the first place. That'd explain the fat black border I usually see around the screen image, until I adjust the picture size.

For whatever reason, a depressing proportion of the world's Windows boxes have their display stuck at 60Hz.

And staring at a 60Hz image will give you eyestrain. Maybe even a headache.

LCDs don't have a refresh rate, in the CRT sense. They have pixel response time (often low enough that high-frame-rate video blurs somewhat; that's another great LCD feature, right there), but they don't flicker at all.

The response time tells you how quickly pixels can change colour, not how often the whole screen's refreshed.

As a result, some stupid schmoe who can't get a regular monitor set up right may well think an LCD is the greatest thing ever.

If you dig LCDs for some valid reason, then that's fine.

I'm happy for you.

Really I am.

If you're buying a new \$1,000 screen just because you couldn't figure out the seven clicks needed to de-flickerise your CRT though. . .

Well, then I think you might just be a bit of a goose.

'Maybe they set a good refresh rate at some point, but then Something Happened (fill in the random Windows-confusing event of your choice here).'

models take up a volume roughly equal to the cube of the size of their front face. LCDs, in contrast, typically have a stand of modest dimensions, and a panel assembly that is only a few centimetres thick.

LCDs use less power, too, though that's unlikely to be a major issue for people who aren't living in the sticks in a solar powered house, or setting up a computer in their campervan, or something. You can buy a lot of power with the hundreds of dollars you save by buying a CRT.

LCDs also have perfect geometry. Even 'flat screen' CRT monitors suffer from the fact that the image is being painted on the screen by three beams of electrons, which are steered to the right spot by magnetic fields.

Doing that accurately in the absence of external magnetic fields is hard enough; when external influences get mixed in too, you need a hatful of geometry adjustments to get a reasonably square and level image on the screen.

LCDs don't have CRT screens' non-square arrangement of phosphor dots,

Chief among the problems of LCDs is that they look washed out when you look down at them and too dark when you look up at them. It's an unavoidable consequence of the polariser-sandwich design they use.

At normal viewing distances, your line of sight to the top and the bottom of an LCD screen is generally sufficiently angled for this effect to be noticeable.

LCDs' razor-sharp pixels also mean that they do, at best, a fairly ordinary job of displaying resolutions below their physical pixel number, and generally don't even try to display resolutions above their pixel number.

Oh. . . and some of the pixels simply won't work.

Well, strictly speaking, it's some of the subpixels that won't work, and they only probably won't work; some LCD panels are flawless.

But a few stuck-on or stuck-off subpixels are allowed by even the big-name monitor manufacturers, as long as the defects aren't too noticeable.

So why is it that so many people report just 'feeling better' when they use an LCD?

WAITLESS WAITLESS

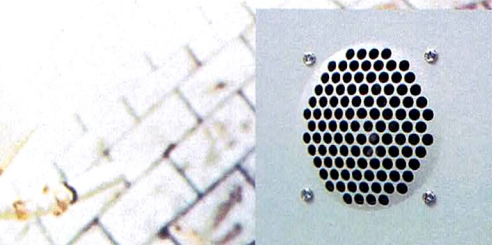
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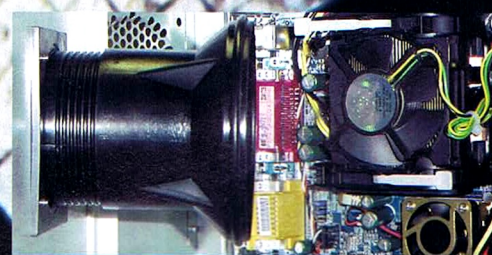


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Technical details

- Pentium 4 1.4GHz
- Golden Orb cooler
- VIA P4x266 mobo
- 256MB 2100 DDR-RAM
- 40GB Seagate IV 7200rpm HDD
- ASUS CD-RW
- Zip 100
- Savage AGP, TV-Out
- Rounded cables
- Thermaltake 80mm exhaust fan
- Deck tread lined case floor
- 12in blue cold cathode tube
- EL orange light tubing
- EXE skateboard wheels


The story

After reading far too many *Atomic* mags I decided to do my own thing. I had the window cut for me by Coolcases, who also supplied the cold cathode tube and rounded cables.

The orange EL cable came from Dick Smith. I had done some research on the Web and found that hardly anyone has bothered to put wheels on their case except some big servers. I bought a new

skateboard and removed the deck then bolted the trucks to the base with the addition of the alloy deck tread for extra strength.

Being a hopeless artist I got the stick-on vinyl from the local stationery shop. I enlarged the entry and exit fan portals by removing the existing metal with a Dremel, this in turn cut back on the noise.

The first reaction from friends and family is 'Why the Wheels?' – my reply: 'Why Not!' 

silhouette's night box



Technical details


- Athlon XP 1600 @ 1.4GHz
- Epox 8KHA+ mobo
- 512MB DDR-RAM
- Two 40GB Seagate HDDs
- SoundBlaster Live! 5.1 DE
- Leadtek GeForce4 Ti4200 128MB
- Zalman CNPS6000-Cu HSF
- Pioneer 16x DVD drive
- Ricoh 32x/8x/8x burner
- Antec 80mm Tri-light fan
- Blue cold cathode
- Rounded cables
- Recessed blue case handle
- Glow-in-the-dark star stickers

The story

I wasn't very happy with my last case as I always kicked the power button, it was quite loud, a bit hot, and I didn't really like the colours. But amidst chants of 'paint it pink' (as I'm just a girl :P), I decided to set out on making my own hot box.

What I wanted was a box to be bright and quiet for my nightowl sessions, tackling my homework (and on #atomicmpc). So I picked out a new case to mod. I liked how the front of the case looked, so I left

the front as it was, and spraypainted the other panels. I also put in a Perspex window to show the goodies inside, such as the tri-light fan.

The blue cathode was installed to get the whole 'blue moon' effect from the Perspex window, and I stuck glow-in-the-dark stars for the night sky. This was completed with the silhouette of a cat, which I cut out from shiny Contact. I also cut out my forum nick 'silhouette' from the same contact and stuck it on the other side. Finally I added a few *Atomic* stickers, and so the night box is complete! :) 

WIN WITH COMPUCON

Send pics of your Hot Box to
hotbox@atomicmpc.com.au to enter!

Stinky Dave's Brown Box



Technical details

- AMD Athlon 1.8GHz
- 256MB DDR-RAM
- ASUS A7S333
- Leadtek GeForce4 Ti4200 128DDR
- 80GB Seagate 7200rpm HDD
- 40GB Seagate 7200rpm HDD
- Samsung 16x DVD
- Ricoh 8x8x32 CD-RW
- 80mm fan (blowing air out)
- Flush button (the power button)
- Sound Blaster Audigy
- Toilet roll holder
- Toilet seat
- Sewer pipe (that blows air out)

The story

The idea for my box started seven years ago at a LAN party, where a new bad smell came from me, and I was given the name Stinky Dave. For years I tried to change that nickname but couldn't do it – everyone knew who I was. A few years later and I'm married, but the nickname remains: I've even started a Team Stinky clan for CS and other games. A friend showed me the boxes in *Atomic*, and while everyone's

looked cool each month they all looked the same. So I started to think that maybe I could make something different.

I bought a toilet seat and toilet roll holder from Big W, most of the rest from Jay Car and Dick Smith, and screws from Hardware House. I need a case that's me: brown, flushing and smelling. The flusher on top was my wife's idea: as you flush the PC turns on, and when you half flush it, the box resets.



Coldfish's Arcade-a-Tron



Technical details

- AMD K6-2 350MHz
- AI5VG+ mobo
- 4MB S3 Trio3D
- AW200 Sound
- Seagate 1.6GB HDD
- 192MB SDRAM
- USB CompactFlash Reader
- NEC Multisync monitor (uncased)
- Old AT keyboard
- 80mm fan underneath
- All MDF cabinet
- Homemade joysticks
- 90° rotating monitor bezel
- Smoked glass from a real cabinet

The story

After owning a few 'real' arcade cabinets and seeing the prices some dealers charge, I was torn between longing to own such classics as Black Tiger or Cadash and keeping my wallet full. Fortunately, when I upgraded my old work PC I had a bunch of unused hardware, and one night I made the huge mental leap: 'Wot if I make an Arcade-a-Tron?'

After some quick Net research, I set to with jigsaw and hand drill. I've built it so all the panels can be unscrewed, making it easier to

fiddle with the beast's entrails. The monitor was de-cased and mounted in a pivoting bezel for vertical scrolling games.

Perhaps the trickiest part was interfacing the joysticks with the 'puter. An old keyboard I had from a 386 had actual switches for each key, so it was merely a case of selecting suitable keys for the controls and soldering them up. Next I fitted all the PC parts on a door at the back so I can get to them easily. Finally, after adding the PSU and cooling fan I was ready to play. . . All up it cost me about \$150.



bit grast mouse

SUPPLIER: PCToy Australia www.pctoy.com.au **PHONE:** (02) 9617 1180 **PRICE:** \$95

After looking at the photo of this product, you're probably wondering 'What's so special about this product?' Well, it's actually designed to be used by your miniaturised clone.

Since Austin Powers' Mini-Me, these designer clones have become very popular, at least around the *Atomic* offices.

Unfortunately Bennett is already so small that his clone can only be viewed under an electron microscope.

At only 70mm long by 40mm wide, this little tackler looks like it was ripped straight from the set of *The Incredible Shrinking Input Device*.

There is no doubt this is the smallest mouse we've ever seen (apart from Stuart Little), but the price certainly ain't small.

It's a bit of a sting at \$95, but those of you with dinky digits might find it a worthy purchase.



GlobalWin Crystal Fan

SUPPLIER: Below-O www.below-o.net **PHONE:** (07) 3348 2155 **PRICE:** \$24

Another day at *Atomic*, and yet another fan rocks up to blow us all away – pun fully intended. Despite the catchy name, this fan is not constructed primarily of crystal meth – otherwise it would cost a whole lot more than \$24.

It actually uses plain old plastic, so we have no idea why it's called the Crystal Fan.

Maybe it was designed by a Skeksi?

Maybe not. . . but it does have a pretty cool feature in that this fan is self aware, sort of.

It's not quite smart enough to design a fusion reactor, but it is definitely smart enough to be the President of the United States of America.

This is due to a built in thermometer that controls the speed of the fan as temperatures increase in your box. So it only powers up to noisy levels when it really needs to.

Clever or what?



Tri-Colour Cold Cathode Kit

SUPPLIER: PC Range www.pcrange.biz **PHONE:** (08) 8322 9544 **PRICE:** \$29

'Like wow dude, glowing lights are like fully trippy, maaaaan. Wow, let's all look directly into that industrial laser. Cooooool, I didn't know my eyes could bleed.'

If you're sick and tired of crispy retinas due to staring into laser beams, a cold cathode is the next best thing to brighten up your PC.

But even plain old cathodes are getting a bit yawn inducing, so now we have weird-arsed models like this Tri-Colour version. Instead of a boring single colour, this thing is divided into three colours, so it's just like having a rainbow in your PC, but without the pot of gold at the end.

Unless you're hallucinating, that is, in which case you'll probably find an entire universe of telepathic ant men guarding the pot at the end of the rainbow in your tower of infinite wisdom.

But back to the cold cathode. . .

A very nice little control box allows you to set this thing to react to sound, or to just flash annoyingly. At a mere \$29, this light offers maximum mod value.



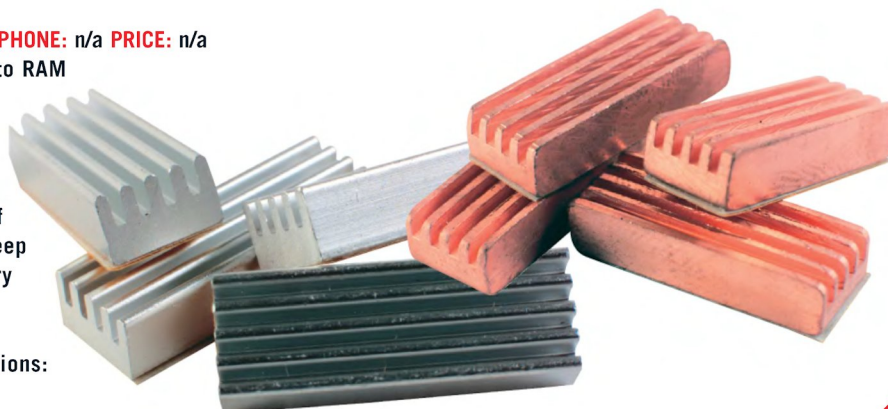
Cooler Master RAM sinks

SUPPLIER: Cooler Master www.coolermaster.com **PHONE:** n/a **PRICE:** n/a

Sink your RAM into this, or maybe you'd like to RAM your sink into this. Or you could even use it for what it's intended, which is to help cool down your video card or system memory.

Not that cooling down your memory will achieve much, especially if your memory is of the BGA type, but at least you'll be able to sleep soundly at night knowing you've riced up every possible piece of hardware in your PC.

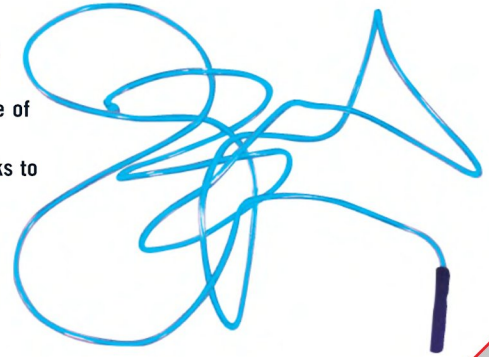
Depending on your taste in metal, these RAM sinks are available in two different configurations: Copper or Aluminium.



EL Glowire Sound Sensitive Kit

SUPPLIER: PC Range www.pcrange.biz **PHONE:** (08) 8322 9544 **PRICE:** \$32

Now that you've loaded your PC up with several of the Tri-Colour cold cathodes that are also in this month's GearBox, you're probably looking for something else to make lights come out of your PC components that shouldn't have lights in them. That's where this fluorescent piece of spaghetti could help out. We're not sure what evil form of magic is used to make a piece of wire light up like an Xmas tree, but something this cool is probably the work of Satan. Thanks to its overall bendiness, this wire can be wrapped around any component you can think of. It's even sound sensitive, so it can throb and pulse along to your toons. We've seen this put to good use under the keys in a keyboard, but can you imagine the cool swear words you could fashion from this stuff? Hell, you could even write the word *Atomic* with it, and guarantee yourself a place in the hallowed Hot Box section. Not that we'd ever lower ourselves to such self-promoting depths. . .



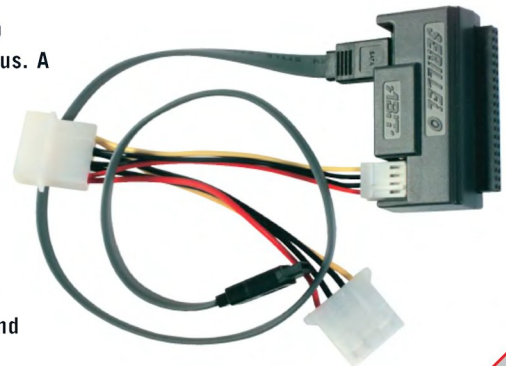
ABIT Serillel adaptor

SUPPLIER: AusPC Market www.auspcmarket.com.au **PHONE:** (02) 9817 2899 **PRICE:** \$82.50

Serial ATA rocks, OK? Just read John's big piece on it this month if you don't believe us. A new motherboard simply ain't worth looking at unless it has a Serial ATA controller, but what are you to do with those old IDE drives that you've now replaced with S-ATA versions? Sure, you could still use the IDE controller on the mobo, but fat ribbon cables sure look ugly.

Instead, why don't you go for one of these little gadgets? Whack it in to the back of your IDE drive, and hey presto, you can now hook up your old drive to that shiny new S-ATA port, thus banishing your old ribbon cables to the whip draw.

It probably won't help your IDE drive's performance, but at least you can fool all your geek friends into thinking you're much more hardcore than them thanks to your pretend Serial ATA hard drive.



Cooler Master faceplates

SUPPLIER: Cooler Master www.coolermaster.com **PHONE:** N/A **PRICE:** N/A

'Anything you can do, I can do better. So much better that you should go and cry like a little baby.' That must be Cooler Master's mantra to Lian Li. First it was beautiful designer PC cases, now it's drive faces.

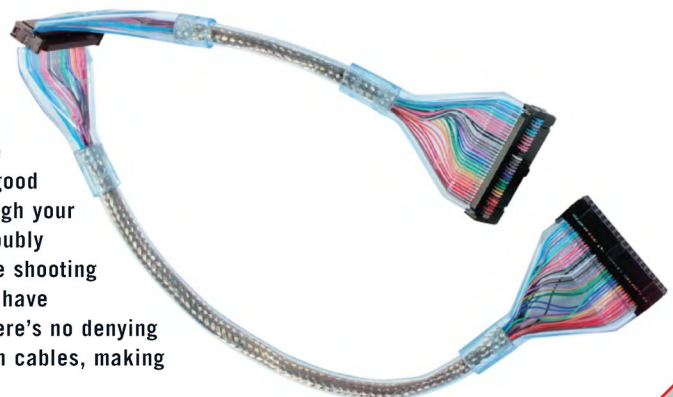
And just like its superior cases, Cooler Master's faceplates seriously own the Lian Li equivalent faceplates. This is thanks to their all round beefier feel: they're much thicker, and they also have the cool Cooler Master logo printed on the front. We had a few issues finding drives that would fit these faceplates, so it would be wise to check that it fits your drive before laying down the green stuff.



Transparent, rounded IDE cable.

SUPPLIER: Anyware www.anyware.com.au **PHONE:** (07) 3856 3999 **PRICE:** \$19

If you can't afford Serial-ATA but still want to maximise the airflow through your PC, you might be surprised to hear that eating a curry and then sticking your bare arse against your PC's blowhole isn't the best way of going about it. However, using rounded IDE cables is a good start for getting the equivalent of the Fremantle Doctor blowing through your case. Not only is this cable round, it's also transparent, making it doubly cool. By being transparent, you can actually watch each binary pulse shooting back and forth between your mobo and the IDE device. Provided you have ultravision eyes, that is. But even with the eyes of a mere mortal, there's no denying that this cable looks a helluva lot better than the standard IDE ribbon cables, making this a must have for those with windows.



Black & White 2



WHY WE CARE: Killer cows are back – but who can forget the monkeys!

DEVELOPER: Lionhead www.lionhead.com

PUBLISHER: EA www.ea.com

PLATFORM: PC **DATE:** Q1, 2003

When it comes to creating off-the-wall game concepts few people have as regularly indulged as Peter Molyneux. Going all the way back to early titles like *Populous* and *Magic Carpet*, Peter has consistently proved that sometimes it is best to go for the ideas you think others will enjoy no matter how nutty they sound.

Certainly *Black & White* fits into this category. The game was part God sim,

part Tamagotchi-style pet game, and extremely fresh conceptually. Even if the gameplay didn't entirely live up to *Black & White*'s promise, with the plot getting sidetracked after you leave the first island, there were some pretty spiffy ideas on offer and certainly the concept deserves another run around the block.

Lionhead obviously agrees with this sentiment, as *Black & White 2* is well underway. Like the original, you'll have to raise a gargantuan creature while also attending to the needs of the people who live in its hometown.

According to Lionhead, along with a general improvement in visuals department, characters in the game should be some 16 times more detailed. Expect fur and recognisable muscular changes when your creatures grow or change alignment.

The game will also see more focus on war and moral choices. The game world will be absolutely awash with turmoil as your village is at loggerheads with others in the region. Indeed your humble peasants will be trainable as soldiers. You will also be able to build a blacksmith's

'nasty sharp pointy items' shop, which you can use to research technology and equip your people.

Metal has also been introduced to the game as a resource. As such, your creatures will be able to wear such things as armour, considering that they will more than likely be the centre of most assaults.

Naturally your town will be a part of this militarisation of the game, with turrets and walls becoming mainstay defences.

In-game communities will have their own architectural styles, flora and fauna as well as costumes for the creatures and people. When it comes to landscape the homogeneity of the original game will be banished forever. Lionhead will also be polishing the camera controls, as well as adding in some new implements in which to guide or punish your massive pet.

Finally, Lionhead is striving for greater communication between creatures and people, as well as increasing the impact of moral decisions on these entities. The game should lob sometime late 2003, but knowing how delayed the original was it could take a little longer. ○

Racing Evoluzione



WHY WE CARE: Because we've always wanted to build our own 'Homer'.

DEVELOPER: Milestone www.milestone.it/eng

PUBLISHER: Infogrames www.infogrames.com

PLATFORM: Xbox **DATE:** Q1, 2003

As fun and popular as racing games are, they don't often present gamers with new concepts and fresh ideas. Most new racing games are about better graphics, deformable panels, the latest cars and that's about all. So when a game maker stands up and proclaims to have something different for racing fans it is indeed a happy day.

Racing Evoluzione could bring that happy day, because rather than gaining licenses,

unlocking better cars and winning your way through championships, you'll instead need to design and build your own sports car in your own factory.

Players will start off with a humble downscale garage, a single mechanic and a meager parts bin to build their racecar from, but as you win races the money will start coming in and you'll grow your automotive empire. After a while you'll not only have mechanics, but a proper R&D department to help you build better cars. Your staff will also come up with ideas of their own and so they'll be able to suggest areas of your business you should improve.

Naturally you'll need to win on the racetrack too, which will prompt other drivers to want your products and then you'll start building cars for customers. You will even be approached by the local law enforcement chaps who will consider your performance cars for their pursuit needs. Getting your name in the paper and other media will be important too, so that you can further expand on your empire and attract more important clients.

While all the cars you design and sell will be fictional, there will be real life cars

from manufacturers such as Dodge (with its potent V10 Viper) and racing Corvettes to compete against. You may think Racing Evoluzione sounds more like a racing management game than a driving simulation, but Evoluzione will accompany a very solid race game that features highly detailed cars (10,000 polygons each) and stunning scenery that has been modelled on racetracks from around the world.

The variety of venues will include races around crowded cities a la Project Gotham, as well as closed circuits, mountain runs and also competitions inside huge sports arenas. The AI drivers will have varying styles too, so you'll need to approach each competitor differently. Some will drive in a more gentlemanly fashion and others will be aggressive nutcases who will fight hard.

Racing Evoluzione is an interesting project and it will be a tough task for developer Milestone to balance the management and business side of the game with the actual driving components. We'll see how Racing Evoluzione manages to tackle this when the game ships early in 2003. ○

Starcraft: Ghost



WHY WE CARE: The first Blizzard action game should be something special considering the company's skill in RTS.
DEVELOPER: Blizzard www.blizzard.com
Nihilistic Software www.nihilistic.com
PUBLISHER: Sierra www.sierra.com
PLATFORM: Xbox / PS2 **DATE:** Q4, 2003

There were many seductively satisfying gameplay moments in StarCraft. Infesting a human base with Zerg parasites or overrunning an enemy position with Protoss carriers would have to be among our personal favourites. That said, sneaking about an enemy base as a high-tech Terran Ghost unit and calling down a nuclear strike would have to be *the* ultimate feat to pull off in the game.

With this in mind it comes as no surprise that StarCraft developer Blizzard is bringing the experience of being a Ghost 'super soldier' to the 3D gaming world. StarCraft: Ghost will see you donning the ultra-high tech gear and elite status of a Ghost infiltration and assassination operative and heading out into hostile territory.

The stealth aspects of this game should be obvious to anyone who has played StarCraft the RTS. As a Ghost, in this case a woman known as Nova, you will infiltrate Zerg bases, Protoss enclaves and rogue Terran strongholds.

In the game you will go on solitary infiltration missions, rescue sorties, reconnaissance excursions and even be a

part of large-scale battles between the main protagonists in the StarCraft milieu. In this last capacity you will also have some tactical input as Blizzard has stressed you will be able to co-ordinate heavy fire support or large-scale attacks from your more mainstream military comrades.

The game will focus on gadget use, and along with the established stuff like your laser pointer, stungun and stealth suit you will have other gizmos that will help you survive in very hostile environments when you are seriously outnumbered.

StarCraft: Ghost will no doubt have a world-class narrative, in keeping with Blizzard's skill in this area, and you should expect tragic double crosses, the reversal of hopeless situations and some really ingenious and no doubt charismatic enemies. At this stage it is not known which of the established characters from the RTS will make it into the game, but the word is some of those folk who you battled with and against in the original game will pop up in one form or another.

Nova will also have new abilities previously not known in the StarCraft universe, such as scaling massive fences, hanging from wires, crawling prone and other acrobatic feats.

Other skills will include psionic power and bionic enhancements. As Nova you will be equipped with special speed skills that will help you to sprint past unsuspecting guards before they can even raise an eyebrow.

Given the popularity of 'Bullet time' special effects it is fair to expect this sort of thing making an appearance in the game, and your special skills open the way for some top graphics.

Vehicles for hooning about in will also play a part in the proceedings with some of the smaller craft which featured in the RTS being among those you get to drive or pilot.

Blizzard is even stressing that there will be strategic play elements in the game as well. Exactly what these will be is anyone's guess. Obviously the game won't be a full-blown 3D RTS, but there will be some strategic decision-making required in the large-scale battle stages and these should add variety to the gameplay in very large healthy doses.

StarCraft: Ghost should be fairly exciting stuff, even if we lament the fact that its release at the end of 2003 will only for PS2 and Xbox – and not necessarily on the PC at all.

Build a Mythic Empire



AGE of MYTHOLOGY™

From the creators of *Age of Empires®*
and *The Age of Kings™*

microsoft.com/games/ageofmythology



ENSEMBLE
STUDIOS

Microsoft
game studios

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Praetorians



WHY WE CARE: Lots of shiny armour and formations – should suit megalomaniacs.

DEVELOPER: Pyro Studios

www.pyrostudios.com

PUBLISHER: Eidos www.eidos.com

PLATFORM: PC **DATE:** Q1, 2003

If you are talking about waging war in ancient times no other group did it with the flair or the dominance of the Romans. Indeed the Roman Empire remains to this day the most long lasting and significant single nation state in all of human history.

You might think another game featuring the ever powerful armies of triumphant Rome would be a bit of a dull proposition, as there have already been a few games to feature troops of 'legionary' status, but Pyro Studios, the team that gave us Commandos, has a few tricks up its sleeve with Praetorians that should surprise people.

For a start the game eschews base building and the resource management

that goes along with it. Instead you build an army by capturing and conquering territory, especially towns, which you then use as recruiting centres for new units. The combat driven resource model should favour those of you who like to play aggressively and prefer not to hold off attacking until you have built a reasonably strong base.

Instead you will have to attack early and often – sometimes this may involve taking on superior enemy numbers.

The game will feature many of the specialist units typical of the times, obviously including Legionnaires as well as chariot riders and pikemen. The game will feature units from other armies, including forces you will control and conquer from Egypt to Gaul.

Furthermore, because the game will take to regions north and south of Rome, there will be a host of different territory types which will require variations in your tactical approach depending on the conditions and terrain.

The game borrows a lot from one of our favourite all time strategy war games Medieval: Total War. Just like Total War, there will be a lot of formation-based action in Praetorians with different formations for you to select depending on the immediate needs of your troops. There will be defensive as well as offensive formations and special formations or squad abilities depending on the unit you are commanding.

For example, you will be able to send an assaulting squad of Legionnaires into battle in the tank-like 'tortoise' formation, and for once the lardy Obelix and the pesky Asterix won't wade through your guys 'biffing' and 'baffing' soldiers all over the place. Instead your tortoise will be a very formidable assault weapon that will be able to approach to within melee range with relatively few injuries. There will also be siege towers, cavalry, ballistae and other specialist units.

Individuals will also be a part of play with some folk being particularly special characters that will influence the battles in a number of ways. If you are heading into enemy territory and need a morale and combat boost then marching with your saddled-up Centurion in tow is a great idea.

Similarly, having your physician along might be judicious if the corpuscle count looks like it could get out of hand.

Finally, you might want to get a feel for

an area before you simply stomp in there like a load of third-graders. The scout is just perfect for this, as this fellow has a special ability which sees him releasing a trained hawk and 'seeing' what the bird sees (strange man).

This sort of special ability-driven stuff helps give the game more personality – assaults in the pre-release code required a good deal of thorough preparation before and during an attack. Defence is also enjoyable stuff as you can line up special formations of pikemen with spears dug into the ground in a bid to stall enemy attackers.

But beware that some units, such as the aforementioned pikemen, cannot travel to just any place on the map, as they have to be kept on the open areas and roads.

Presumably the long pikes somehow get stuck in the trees or something, as you can't move through forests. As illogical as this rule sounds, it still makes for some interesting conundrums, as you have to decide on how to best move along tracks with woods either side of them. Do you send out a scout, or deploy lighter troops into the undergrowth to cover your pikemen's flanks against a possible ambush? Decisions, decisions.

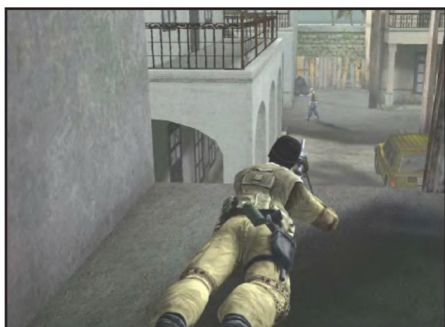
These sorts of issues are very much the meat of this game as army building is reasonably simple: you recruit new men in captured towns and the type and quantity of men you get is based on your notoriety as a commander as well as the town's ability to produce a population.

Finding the enemy can be half the fun too, as you will only be able to see the foes that are within your troops' line of sight, so there is a lot of room for cut and thrust manoeuvring and ambushes. Thus scouting is essential and it will be possible to launch surprise attacks against bases by outflanking enemy troops in the field – something you'll have to be wary of as well.

The way the troops march in formations, especially the way they wheel to turn and make satisfying clanking noises, is likely to please many, as is the interface, which is very easy to get the hang of and is full of AI options, formations, waypoint commands and troop group options.

Praetorians might well be the surprise packet for strategy fans, seemingly coming out of nowhere in the early part of this year.

Rainbow Six: Raven Shield



WHY WE CARE: It's squad-based tactical fun from Tom Clancy.

DEVELOPER: Red Storm Entertainment

www.redstorm.com

PUBLISHER: UbiSoft www.ubisoft.com

PLATFORM: PC **DATE:** Q1, 2003

You might think that JRR Tolkien, or even the much vaunted Ms Rowlings are the authors who have had the most success in the videogame world. However, if you are using sheer volume of titles as your yardstick, then Tom Clancy is your man. What's more, squad-based tactical shooters with the good fortune to have his name slapped onto them are more often than not very good things indeed.

Raven Shield won't be radically changing the basic narrative formula that has worked well for all of the games so far. You will still lead a small team of antiterrorist Special Forces guys into dangerous hotspots where you are often outgunned and outmaneuvered. The game will deliver 15 solo campaigns and six multiplayer scenarios with a huge arsenal of weapons for you to choose from. There will be nearly sixty toys for you to play with as well as a host of as yet unnamed new multiplayer modes for you to experiment with.


The game will be powered by an improved version of the Unreal engine with the visuals looking far tastier than the previous iterations in the series. The animations in particular are more fluid,

with your men moving with a much more natural gait. Special effects like prolonged ringing in your ears and visual blurriness after a flashbang has gone off close by will also be a part of the mix.

Thermal imaging is also looking much more polished with smooth character animation and much better use of the colour spectrum. Using thermal information you will be able to drop enemies from behind doors and thin walls – but don't think you will be able to wander about with the sniper scope pressed to your eye socket, as was the case in the previous titles. The scope has been redesigned and it will be much harder to comfortably run about with the sight when compared to the last game in the series, and will require a more realistic approach.

The heartbeat tracking sensors and thermal gadgets have also been made more realistic in that you won't be able to use them unfairly to find and attack your enemies with pinpoint precision. Instead the sensors will give you an idea of where the enemy is. This tweak makes plenty of sense too, as you will have to rely on stealth and teamwork to win as you infiltrate hostile-held areas.

While the recently released *Sum Of All Fears* game, based on the Clancy penned-tale of the same name, has been criticised as being too lightweight for the Rogue Spear loving faithful, Raven Shield will be unlikely to cop the same flak. Raven Shield will feature all of the detailed planning options that have become a trademark of the Rainbow Six series. However, you will be able to leave this aspect of the gameplay alone if all of the mucking about with waypoints isn't to your taste as there will be default options for you to use.

Finally, the game's AI has been tweaked substantially, so you won't be able to get away with using the same tried and tested tactics on each opponent. Instead there will be different AI profiles for enemies with these varying from basic thug to ex-Special Forces fighters. Enemies will also be placed randomly about maps so you won't be able to gradually win your way through a mission by learning the placement of every enemy and having a trial-and-error approach. Instead sound tactics and the ability to react to a fluid strategic situations will be the key. Raven Shield should be sneaking its way into games shops in the next month or so. 

Follow a Legend



AGE of MYTHOLOGY™

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and *The Age of Kings™*

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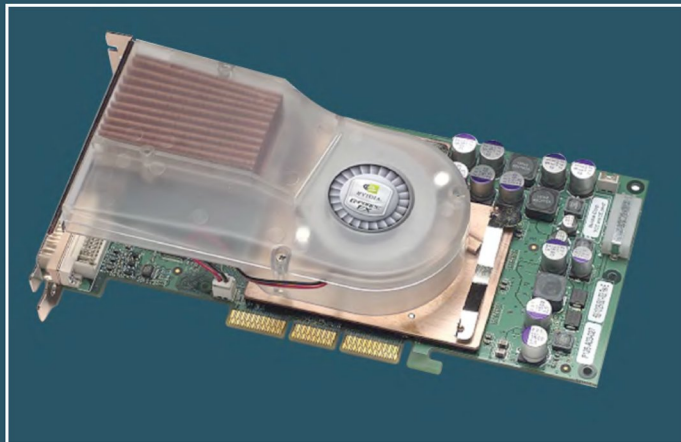
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FX rising

One of the most talked about unannounced products of the last year finally has a name and a pile of tasty features. Join John Gillooly for a first look inside GeForce FX.



After months of speculation with no sign of an actual product, NVIDIA swung itself back onto the horse at Comdex this year and launched, on paper, the GPU formerly known as NV30, and now known as GeForce FX. With ATI now panting at its heels this GPU is one of the most critical releases from NVIDIA in years.

GeForce FX's release has been a long time coming. NVIDIA has spent the best part of six months trickling information to the public, ever since CEO Jen-Hsun Huang admitted that the tape-out of the chip occurred much later than anyone expected. Following this was a strong NVIDIA showing at SIGGRAPH, where it released the first solid information about its CineFX architecture and began to woo the pro 3D community with promises of cinematic quality 3D achievable with NV30. This is a very interesting turn of events: ATI has spent the past year wooing gamers with pre-launch hype for the RADEON 9700 but NVIDIA chose to push past its traditional stronghold into the pro 3D market.

During the time leading up to the launch at Comdex, speculation was rife about what the new chip was to be called. Huang had announced soon after the launch of the GeForce4 that there would be no GeForce5. Hot contenders for the name were Omen, Nitro and Eclipse. But in the end it was a minor stuff up on the NVIDIA Website that let the cat out of the bag. GeForce would stay, but rather than a number it would be followed by the letters 'F' and 'X'.

The reasoning behind the naming choice shows an uncharacteristic sentimentality (or at least a willingness to sell cards to sentimentalists). There is a double meaning to FX: there is the obvious visual effects angle, but it also references the intellectual and human resources from 3dfx that have gone into creating this beast.

Big and small

The GeForce FX GPU is a work of semiconductor art. It has around 125 million transistors – over 10 million more than the RADEON 9700. It is one of the first 0.13-micron graphics chips, as SiS recently launched the 0.13-micron Xabre600. Trident is still to release working XP4 samples, and the transition to this process in TSMC's troubled foundries has been a big reason for the delays. Much as NVIDIA

pioneered the use of DDR-RAM on the original GeForce256, the GeForce FX will be the first widespread implementation of the DDR II standard, with the memory running at a double-pumped 500MHz – an effective 1GHz RAM speed.

Using DDR II has been NVIDIA's way of avoiding the move to a complex and expensive 256-bit memory bus. ATI and Matrox are both using such architectures, but NVIDIA strongly believes that combination of the GeForce FX GPU running at 500MHz with 1GHz DDR II will postpone issues with memory bandwidth for another generation. Details about the makeup of the memory controller architecture, to be dubbed Lightspeed Memory Architecture 3, are still scant.

As a contrast, the RADEON 9700 PRO runs with a 325MHz core speed and an effective 600MHz RAM speed over a 256-bit memory bus. ATI has already demonstrated DDR II running with the R300 core and has confirmed that the memory controller was designed to accommodate DDR II, however the performance delivered by the current configuration is still more than ample for today's games.

Cards bearing the GeForce FX moniker are still as of yet unannounced, however the hot tip is that there will be multiple variants, probably including a high-end ultra model and a mid-range card. NVIDIA's demonstration cards at COMDEX included some interesting features, namely a Molex power connector, and one model with a cooling system reminiscent of the copper heat pipe solution that ABIT calls OTES and uses on its Ti4200 cards.

It is still unknown whether the cooler will make it to the mass market, and whether or not the power connector will be a feature of the final cards. ATI has used a floppy power plug on its RADEON 9700 but pre-launch word was that the less power consumption achieved by going with a 0.13-micron process would mean that the GeForce FX would escape the need for more power.

Shading overkill

Information is still scarce on some parts of the GeForce FX, with the vast majority of launch white papers devoted to CineFX – the name given to GeForce FX's shader array. In DirectX 8, pixel shaders were at a much more primitive stage than now, lacking the true flexibility that should be provided for developers to work with them.

The DirectX 9 specification includes several major new features such as displacement mapping support, however the most important are the updated shader engines: the Pixel Shader 2.0 and Vertex Shader 2.0. The RADEON 9700 and 9500 cards from ATI support these already, but NVIDIA has gone one step further, creating what it dubs Pixel Shader 2.0+ and Vertex Shader 2.0+.

This is because CineFX goes beyond the DX 9 specifications. In the case of vertex shaders this involves adding support for an extra four registers for us in shading programs. However the major changes come in the pixel shader, which NVIDIA is basing a lot of its cinematic quality computing philosophy upon. While the vertex shader is still an integer-based unit, albeit with some major updates, the pixel shaders on the GeForce FX are full floating point units.

Vertex shaders now support looping, branching and flow control, which allows for incredibly long operations to be undertaken by passing results back through the pipeline. The extra four registers help the GeForce FX to store more of these operations temporarily. At the most fundamental level these longer instructions will help when an object needs multiple vertex shader operations. Whereas this would involve multiple shaders in the past, the GeForce FX can happily do it with one complex shader.

Float my boat

By adopting a floating point approach NVIDIA opens up the potential of the pixel shaders. Take a look at the numbers touted by NVIDIA in the table on *page 28*. Floating point allows for thousands of constants and registers, blowing the limits of the specs way out of the water.

GeForce FX's pixel shaders can be seen as the heart and soul of the card. Despite the fact that vertex shaders are much more commonly used, NVIDIA's push towards cinematic computing revolves largely around the 128-bit precision of the pixel shaders and colours.

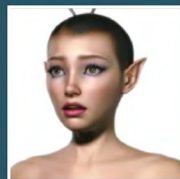
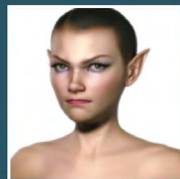
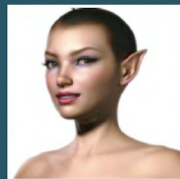
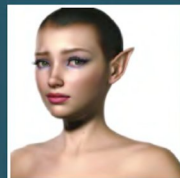
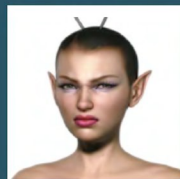
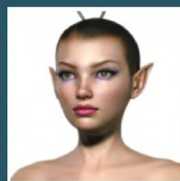
Pixel shaders are now amazingly flexible beasts, supporting ridiculous numbers of operations on every pixel. In fact, the pipeline is so long and flexible that other companies argue that it will impact performance on large shader operations. For example, the shaders can now perform up to 1,024 texture related instructions for every pixel, which will be a boon for anything that requires multiple texture references, like some lighting effects.

Colourful language

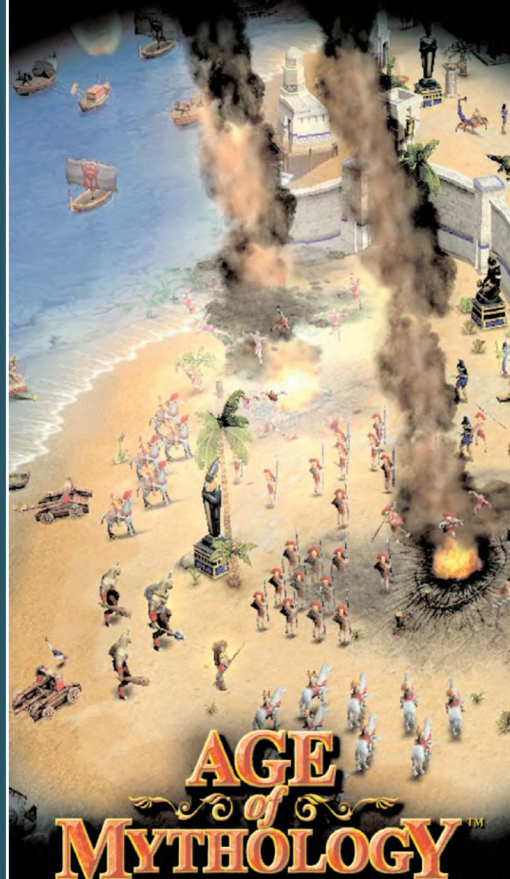
One feature common to NVIDIA and ATI's DirectX 9 cards is support for 128-bit colour operations. NVIDIA has gone one better and introduced a lossless 4:1 colour compression algorithm (much like the one used in NVIDIA's Z-compression function). While it is doubtful that we will see 128-bit colour on our desktops until at least the launch of Microsoft's Windows XP successor, Longhorn, it is internal colour precision that is the major issue de jour. NVIDIA has taken an interesting approach to this, including support for two different floating point formats throughout the pipeline while allowing developers to switch between the two mid-operation.

DirectX 8 allowed for 8-bit colour precision, while DirectX 9 has two levels of colour precision that can be employed: 64-bit and 128-bit. On top of making its entire pipeline wide enough to accommodate 128-bit numbers, NVIDIA has added support for both these formats by allowing developers to switch between FP16 (64-bit) and FP32 (128-bit) on the fly when using shaders. This can occur within the same shader, as some operations on large textures will require FP32, but the rest of the calculations can happily be done using FP16, which is faster than its sibling. This speed boost occurs within the shading architecture, which can handle either one 128-bit calculation or two 64-bit calculations at a time, leading to FP16 taking half the time of FP32 operations.

The key to unlocking all of this performance, in NVIDIA's mind at least, is the use of Cg. This high-level shader language allows for easy coding of shaders and is supposedly platform agnostic, with NVIDIA encouraging other graphics players to develop their own compilers for the language.



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The return of NV-Blur?

Such high colour precision would mean little if attention wasn't given to other image quality issues. NVIDIA has included several technologies that go in to improving the quality of the final image, all going under the moniker of 'Intellisample' technology.

One of these is dynamic gamma correction, which allows developers to code for shading operations using a linear colour space and then gamma correct the final output. The other big one is NVIDIA's somewhat new antialiasing and filtering techniques.

It was this area in which the RADEON 9700 PRO made a major impact, as the newfound memory bandwidth made it finally feasible to play everything with antialiasing and anisotropic filtering and still have frames to spare.

Unfortunately, NVIDIA doesn't appear to have focused too heavily on antialiasing, as all GeForce FX adds is support for higher quality 6xS and 8x AA modes, reducing antialiasing to a mere paragraph of one of the many GeForce FX white papers.

On the other hand, some impressive work has been done on texture filtering, with GeForce FX featuring what NVIDIA calls Adaptive Texture Filtering (ATF). While users still have control over how aggressive the settings are, ATF involves constant monitoring of the output and adjustment of the methods to provide the best image quality. This ends up as a mix of trilinear and anisotropic filtering techniques being used and is potentially one of the most instantly noticeable features of the GeForce FX.

The end, for now

There are still a lot of details to come out for the rest of the feature-set, and the performance of the GeForce FX. Despite working cards being shown at COMDEX, no one expects cards to appear until at least January 2003. It is rumoured that there will be several card variants,



including the return of the 'Ultra' moniker, but this is as yet unknown.

It is a much different landscape from the one into which NVIDIA launched the rest of the GeForce series of GPUs.


For the first time in years ATI has the performance crown and several months of good exposure to build on. NVIDIA's solution looks quite different from ATIs despite the end result – support for DirectX 9 – being the same.

Perhaps the big market for GeForce FX above and beyond us hardcore gaming types will be low-budget CG for television and movie production.

NVIDIA's GPU may not approach the power of serious render farms, but for small-scale production it should excel. In fact this area is so tempting that John Carmack was saying the very same thing at Quakecon this year.

For now we have to wait for cards.

The only benchmarks so far have been released by NVIDIA during the launch, and we would much rather wait until the card is sitting in our testbench before we comment on performance.

But rest assured, there is no way NVIDIA will let a slow card out the door. 



	DX8 specification	DX9 specification	DX8 specification	The GeForce FX implementation of DX9
Pixel shader	Version 1.4	Version 2.0	Version 1.4	Version 1.4
Instructions	32	64	32	32
Constants	8	32	8	8
Registers	6	12	6	6
Vertex shader	Version 1.1	Version 2.0	Version 1.1	Version 1.1
Instructions	128	256	128	128
Constants	96	256	96	96
Registers	12	12	12	12

Power 4 the Next Generation

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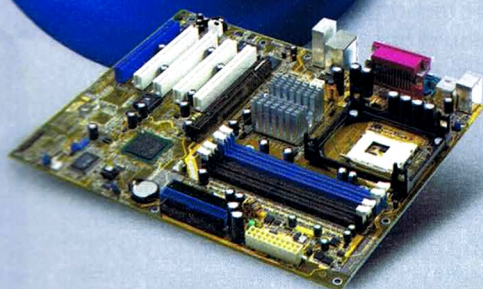
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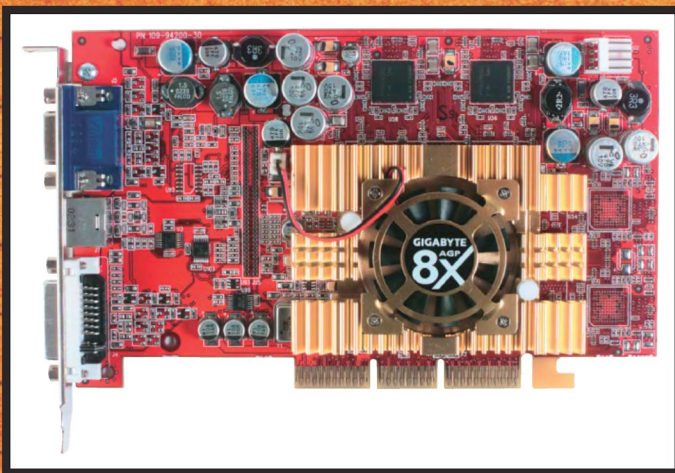
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RADEON 9500 vs GeForce4 Ti4200

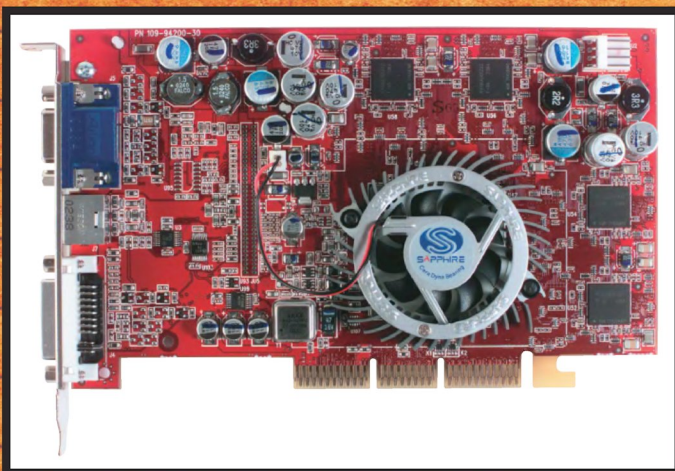
The video card market is beginning to bulge in the middle, and John Gillyooly cannot help but give it a little prod. He pits ATI's next generation mid-range chip against NVIDIA's refreshed GeForce4 Ti4200.



ABOVE: In the NVIDIA corner is relative newcomer Albatron with its GeForce4 Ti4200 with AGP 8x card, the Ti4280.



ABOVE: The lower end of ATI's new range is the RADEON 9500. This card from Gigabyte uses an 8-layer PCB designed for the RADEON 9700.



ABOVE: The fully pipelined big brother RADEON 9500 Pro from Sapphire. Again this card uses a RADEON 9700 PCB.

Every time you get comfortable with the way the video card market is moving, it goes all wobbly and flies off in a new direction. Who would have thought a year ago that we would be ending 2002 with an untouchable high-end card from ATI and only the promise of a killer competitor from NVIDIA? As we wait to see what NVIDIA can deliver at the high-end, there is another big battle shaping up in one of NVIDIA's most successful niches: the low-end of the high-end.

For some time now NVIDIA has been sitting pretty with the GeForce4 Ti4200 chip. This fully featured, but slightly slower than bleeding edge card has become a favourite of those who want power on a budget as well as those who want to overclock to Ti4600 speeds at the lowest possible price point.

NVIDIA has just refreshed the Ti4200, adding support for AGP 8x and focusing heavily upon the Ti4200 with AGP 8x as the saviour until GeForceFX rises from the pages of marketing documents and becomes a real entity. However, NVIDIA now has competition from ATI, who is causing problems at the GeForce4 MX end of the market with its DirectX 8-compliant RADEON 9000. The competition comes in the form of the RADEON 9500 series, which is ATI's way of reducing wastage by using all those R300 cores that just fall short of perfection.

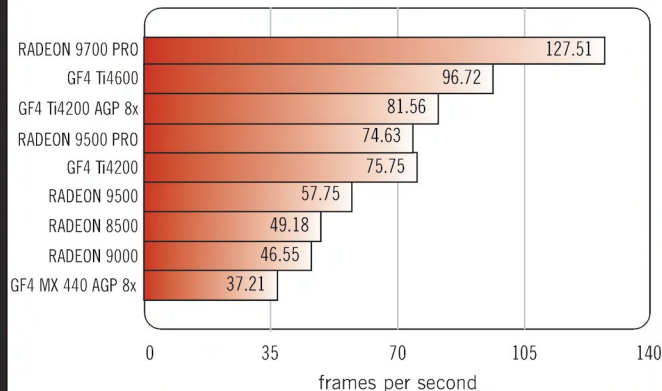
To do this, ATI has designed the specs of the 9500 series to accommodate the fabrication problems that would make the chips not meet RADEON 9700 PRO status. The major change involves the use of a 128-bit memory controller rather than the often talked about 256-bit controller seen on the 9700. The second major change differentiates the RADEON 9500 from the RADEON 9500 PRO and involves halving the number of pipelines on the card. The RADEON 9500 PRO has the full eight pipelines seen in the RADEON 9700, while the vanilla RADEON 9500 has only four pipelines.

By doing this, ATI now has four slightly different variants of the R300 that it can carefully position throughout the high-end market, while at the same time maximising the number of chips it can sell from each wafer.

One of the major advantages of ATI's product line-up is that both the 9500 and 9700 series are fully DirectX 9-compliant – something that NVIDIA cannot yet boast. However, the architectural omissions that differentiate the 9500 and 9700 make for a more confusing picture than the simple speed ramping of NVIDIA's GeForce4 Ti series.

To crown a champion in this newfound battle for the mid-range 3D domain, we gathered examples of each of these new cards and pitted them against each other in a series of tests designed to show off their full potential. To do this we have used the latest available drivers for both sets of cards and tested using Microsoft's DirectX 9 Release Candidate O.

We tested using a KT400-based ABIT AT7-Max2 motherboard, which we have found to be one of the best KT400 boards in terms of AGP 8x-compatibility, 512MB DDR333 and an Athlon XP 1800+. Testing was done under Windows XP Pro with Service Pack 1. To focus upon next generation performance, and while still suffering from a lack of a DirectX 9-based 3DMark2003 benchmark, we tested using

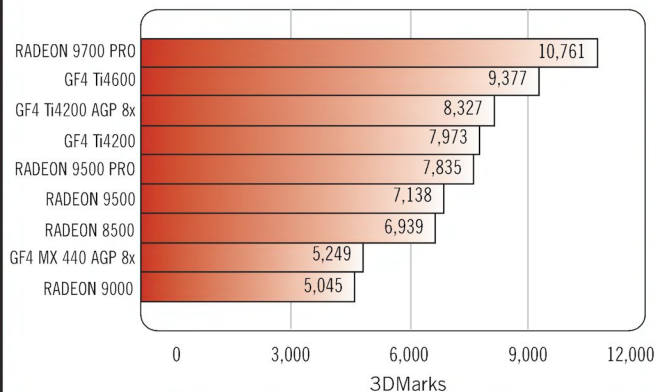
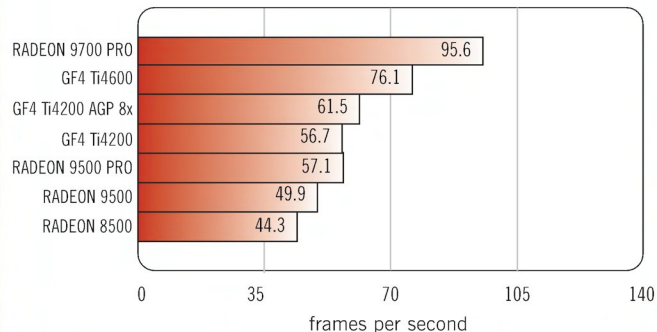
UT2003 – 1,280x1,024 high quality

3DMark2001SE Pro, Codecreatures Benchmark Pro and Unreal Tournament 2003 using HardOCP's benchmarking utility.

As for the cards, we have used Albatron's Ti4280 card, which is based around the GeForce4 Ti4200 with AGP 8x chip, Gigabyte's RADEON 9500 card and Sapphire's RADEON 9500 PRO. Currently, with the 9500 series in its infancy, all companies are making RADEON 9500 cards using the complex eight-layer PCB seen on the RADEON 9700 PRO. This added complexity is complete overkill, as the eight-layer PCB is needed to accommodate the 256-bit memory bus that is absent on the RADEON 9500 cards. In fact, at the moment the error screen that comes up when you forget to plug in the power cable still says that the card is a RADEON 9700.

By the time the cards gain widespread distribution, they should be coming on different, less complex PCBs. For now the eight-layer PCB may be overkill, but it makes for some tasty overclocking numbers.

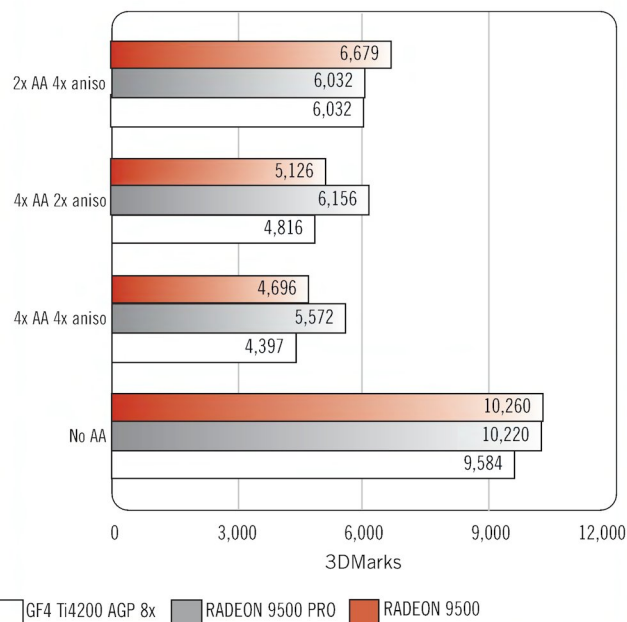
Before we began our main testing we did some comparative tests between the latest ATI Catalyst drivers for DirectX 8.1 and ATI's release candidate DirectX 9 Catalyst drivers. Switching to DirectX 9 gave a jump of around ten frames per second in Unreal Tournament 2003, however there was no noticeable change in the Codecreatures or DirectX 8.1 focused 3DMark2001SE Pro. Because DirectX 9 is nearing the end of its glacial drift towards release we have done our testing using the DirectX 9 release candidate drivers from ATI. There are currently no DirectX 9 drivers available for the GeForce4 Ti series of cards, so we used the 40.72 Detonator drivers.

3DMark2001SE Pro – 1,280x1,024**3DMark2001SE Pro – Nature test 1,024x768****Middleweight battle royale**

In 3DMark2001SE Pro there are only 500 3DMarks separating the GeForce4 Ti4200 with AGP 8x and the RADEON 9500 PRO, and in a picture that only becomes more common, the RADEON 9500 drops behind its PRO brother by 700 3DMarks. As you can see from the other cards we tested, the RADEON 9500 and GeForce4 Ti4200 sit nicely in the gap between the GeForce4 Ti4600/RADEON 9700 PRO high-end and the GeForce4 MX/RADEON 9000 low-end.

To investigate the more advanced DirectX 9 shading units on the ATI cards, we also looked at the results for the nature test, which focuses heavily upon pixel and vertex shaders. Surprisingly, the picture is not as clear as we would have expected, with the results closely reflecting the spread seen in the overall 3DMark scores. We will have to wait for the release of 3DMark2003 for a serious picture of how the cards compete under DirectX 9.

Our next tests were with the taxing Codecreatures Benchmark Pro. This benchmark is heavy on the shaders, but also stresses the video RAM, with a need for 128MB available to run. This leads to a visible gulf in the graphs between the 64MB cards, which fall back on AGP speed. As an interesting side note, the RADEON 9000 card actually beats the RADEON

3DMark2001SE Pro – 1,024x768

8500 when AGP speed becomes important, and thanks to AGP 8x this is the only test in which the RADEON 9000 comes out ahead of the RADEON 8500.

Our UT 2003 results are an average framerate over a range of fly-by benchmarks. Again the picture is similar, with the RADEON 9500 sitting just behind the GeForce4 Ti4200 with AGP 8x. It is also in this test that the biggest gaps between the RADEON 9500 PRO and the RADEON 9500 are seen, with the PRO coming in almost 30 per cent faster than its half-pipelined sibling. Seeing as UT 2003 is the most advanced real world 3D gaming benchmark out there, it offers a glimpse at the future performance gap between the 9500 and the 9500 PRO.

Smooth operations

One of the major areas of gain with the RADEON 9700 PRO (and touted areas of gain with the GeForce FX) was the freeing up of memory bandwidth. By employing a 256-bit memory bus the 9700 PRO is able to use antialiasing and anisotropic filtering without the performance hit seen in the previous generation of cards. However, the 9500 series only uses a traditional 128-bit memory bus. Similarly, the GeForce4 Ti4200 with AGP 8x uses a 128-bit memory bus.

We tested antialiasing and anisotropic filtering performance to see how the cards cope with the added loads. The 9500 PRO card flogged the competition, beating the GeForce4 Ti4200 with AGP 8x by almost 900 3DMarks when 4x antialiasing and 4x anisotropic filtering were used.

Hot and speedy

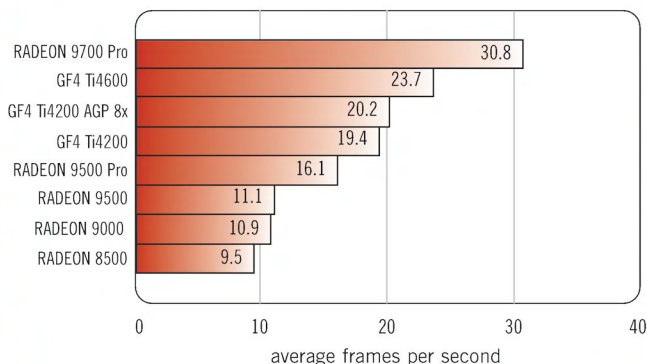
Our final round of testing involved overclocking the cards as far as they could go. Please bear in mind that the RADEON 9500 cards we tested are using the eight-layer PCBs, which enhance stability and hence overclocking, and the results are only indicative of cards using these PCBs. This is something that we will revisit once retail RADEON 9500 PCBs become available.

The reason we have to mention this is because of the monumental overclock managed by the Gigabyte RADEON 9500 card. We pushed the Powerstrip frequency sliders all the way up to maximum and the card was still stable enough to benchmark without any visual artefacts. In numerical terms, we took the core from 275MHz to 368MHz and the memory from 540MHz to 718MHz, which as you can see from the graphs pushes the 3DMark score up to parity with the overclocked RADEON 9500 PRO one.

Sapphire's RADEON 9500 PRO was also a good overclocker, even if it wasn't capable of reaching the heights seen with the vanilla 9500. We cranked the memory up from 540MHz to 659MHz and the core from 275MHz to 325MHz, enough to squeeze out a 3DMark2001SE Pro score of just over 11,000.

After seeing the great overclocking potential of Albatron's old Ti4200 card last issue, we were keen to see how the new Ti4280 card would fare. The results we achieved were much

Codecreatures Benchmark Pro – 1,280x1,024



less than those on the ATI-based cards, with the core rising from 250MHz to 295MHz and the RAM from 513MHz to 634MHz. This was, however, still enough to keep the Ti4280 ahead of the other cards in the 3DMark2001SE Pro score.

ATI has managed to deliver a highly competitive solution in the one section of the market that NVIDIA still reigns supreme. Unfortunately ATI has not managed to smack the GeForce4 Ti4200 with AGP 8x around in the benchmarking stakes, but it has managed to release a card that comes damn close.

Unfortunately, the RADEON 9500 is not that card. There are too many things left out to make it a lasting purchase. The impetus for 128MB of video RAM will only get greater as time passes, and the RADEON 9500 is let down not only by this, but by the halved number of pipelines that it possesses. On the other hand, the RADEON 9500 PRO delivers nearly all the features of the RADEON 9700 PRO, lacking only the bandwidth bonanza that is a 256-bit memory bus and the clock speeds that make the 9700 PRO so untouchable at the moment.

On the other hand, the GeForce4 Ti4200 with AGP 8x bears no enhancements beyond increased AGP speed, but still manages to deliver performance that is astonishing for the price. The RADEON 9500 PRO does have an advantage when it comes to antialiasing and anisotropic filtering, but for normal tests the Ti4200 wins across the board.

Forget the RADEON 9500 – the battle here is between the RADEON 9500 PRO and the GeForce4 Ti4200 with AGP 8x. Each has its benefits; the Ti4200 is slightly faster and will have the best compatibility straight out of the box, thanks to the long legacy that it stems from.

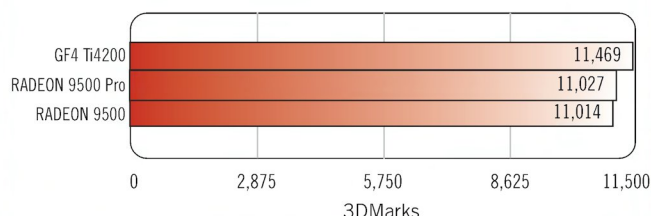
On the flipside, the RADEON 9500 PRO is fully DirectX 9-compliant and never strayed too far behind the GF4 Ti4200 in our benchmarks. It will inevitably suffer teething problems, especially in the driver stakes, but the most impressive thing about ATI of late has been its ability to get on top of incompatibilities and turn around working driver fixes in a very short amount of time.

In the end it is price that has a deciding vote on which chip you should choose. At the time of writing the recommended retail prices for the cards are as follows:

The Gigabyte RADEON 9500 sits at \$469 from Synnex (www.synnex.com.au); the Sapphire RADEON 9500 PRO is still to be announced from Achieva (www.achieva.com.au); and the Albatron Ti4280 is \$429 from QTD (www.qtd.com.au).

If you long for the high-end but cannot make the huge financial contribution needed to experience it, the mid-range has great performance and is only going to blossom under the weight of competition, making us end users the real winners.

3DMark2001SE Pro – 1,024x768 overclocked



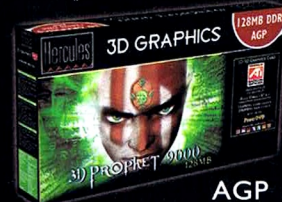
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Hail SATA!

An epic quest to get his hands on a SATA drive behind him, John Gillooly gets some real-world performance numbers out of the future of hard drive technology.



ABOVE: The SATA version of Seagate's Barracuda V



ABOVE: On the left is the data connector and on the right the new power plug

We had almost given up hope with this one, after months of searching high and low for Serial ATA drives we still had nothing to show. In fact we had been searching so long that we initially had to line up a preproduction motherboard from Taiwan for testing, purely because at that time there was no product that actually had SATA ports.

Our digging uncovered some startling facts: despite the fact that SATA was touted to appear mid-2002, and even after working setups were shown at IDF and Computex, drive manufacturers were holding it back and drives would not be seen until the end of the year. If they were lucky, motherboard manufacturers had a single sample drive for their entire research and development effort even though, ironically, for the past few months, SATA has undoubtedly replaced IDE RAID as the premium component of choice on high-end motherboards.

But as the search continued word hit the street that, unbeknownst to most of the hardware community, a crate full of 120GB Seagate Barracuda V SATA drives had wound its way into the hands of a local distributor. Unfortunately, the drives did not have the expected old style Molex connectors; instead they had new SATA power connectors and hence required new cables (of which there were none in the country).

After some hunting around, those fine techies at Xenon (www.xenon.com.au) came through, supplying us not only a SATA Barracuda V but also the cable to go with it.

Seagate then jumped in and supplied some identical parallel ATA models for comparison and the great SATA adventure began.

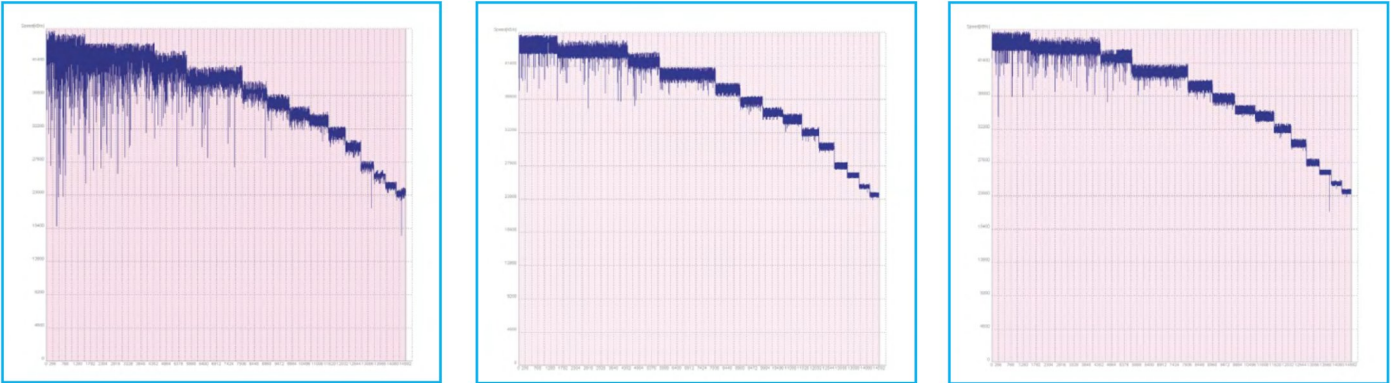
Driving forward

Serial ATA is a new standard designed to replace the aging Parallel ATA disk drive interface. Built around serial communication it is designed to do away with ugly ribbon cables, increase the reliability of data transfers, and provide bandwidth for future improvements in disk drive technology. It is designed as an internal interface for storage devices, sitting hand-in-hand with the increasingly commonplace USB 2.0 for external connections and the upcoming PCI-Express technology for expansion cards.

One common misconception with SATA is that it somehow replaces IDE. IDE, or Integrated Drive Electronics, refers to the design in which the drive controller is mounted – not on the motherboard but on the drive itself. The IDE controller is still there, but it talks to the host controller on the motherboard via an ATA connection. To the operating system SATA looks exactly the same as Parallel ATA for the moment. Future OSes may be able to take advantage of new features inherent to SATA.

SATA has a maximum 150MB/s data throughput, up from the 133MB/s throughput of ATA133 and the 100MB/s of ATA100. However, because just the interface has been changed, the data throughput is still bottlenecked by the drive design. Hence, for the same reason that ATA133 is a Maxtor-only initiative, SATA is being pushed for reasons other than data throughput.

Using a simple two wire data connection (with some grounds thrown in), one dedicated to upstream traffic and one to downstream, SATA is set to revolutionise airflow within the case thanks to tiny cables that are a fraction of the size of the tightest of rounded parallel ATA cables.



ABOVE: On the left are Drivespeed32 results for Parallel ATA; in the middle SATA and on the right Serial. Note the influence of serial cabling on access patterns

This wire configuration also allows for drives to be hot-pluggable. A nifty pin configuration means the drives are grounded before being powered and can safely be attached and detached at will. An interesting spin on this aspect is the external SATA connector supplied with the Gigabyte GA-8INXP motherboard that we used for testing. This takes up an expansion slot and allows you to hook up and power SATA drives when they are outside the case, great for spontaneous leeching binges.

Hot-plugging is ultra cool. There is a certain thrill to be had from sitting at the testbench, watching Windows Explorer and plugging and unplugging the drive. Connection is instant; plug in the drive, power it up and away you go. One tip though: it would be smart to disable write caching if you want to use the drive constantly as a hot plug device and actually keep your data intact.

Currently using SATA for your primary drive in Windows XP is identical to using one on a RAID controller. When you begin the install you are asked for the driver disk, after which there is no outward appearance that the drive is different from any other.

Benchmarking cables

Hard drive testing is always a tricky business. We have tested drives in three configurations: SATA, Parallel ATA and one using an ABIT Serilite SATA-to-Parallel adaptor. We chose to test with the Serilite adaptor because some recent motherboards have had one Parallel and one SATA controller. Therefore in order to use RAID, one of the drives must be SATA. ABIT's Serilite adaptors are quite popular solutions for this, so performance becomes an issue. Also, the Seagate drives we tested are the only 'Native' SATA drives at the moment. Other drives use a chip to translate Parallel into Serial signals, whereas Seagate work purely in Serial.

Our testbench was a mixed bunch of best and worse. The CPU was a 3.06GHz Pentium 4 with Hyper-Threading disabled to eliminate any influence on performance. We chose the Gigabyte GA-8INXP motherboard for testing as it used separate Parallel ATA RAID and SATA controllers rather than a mixed chip.

The SATA controller on the Gigabyte motherboard is a Silicon Image SATALink chip.

We tested with two configurations. For the first IPEAK and DiskSpeed32 benchmarks, we ran the drives as secondary ones to our standard Maxtor ATA100 drives. For these tests we used 1GB of dual channel DDR266 to eliminate any bottlenecking.

Then we ran some real world tests, using the drives as primary ones, installing Windows XP with Service Pack 1 and the benchmarks, defragging and then benchmarking the system. In order to increase the swapfile use and hence the amount of disk accessing done the testbench only had 128MB of RAM.

One thing to note is that these Seagate Barracuda V drives may

be quiet and fast, but they do get very hot (almost untouchable at times) and so we recommend a few fans nearby, as we ended up doing while testing. At least, when we weren't using the drives to heat our coffee for between-benchmark drinks.

Our selection of benchmarks has a couple of new programs and some familiar ones.

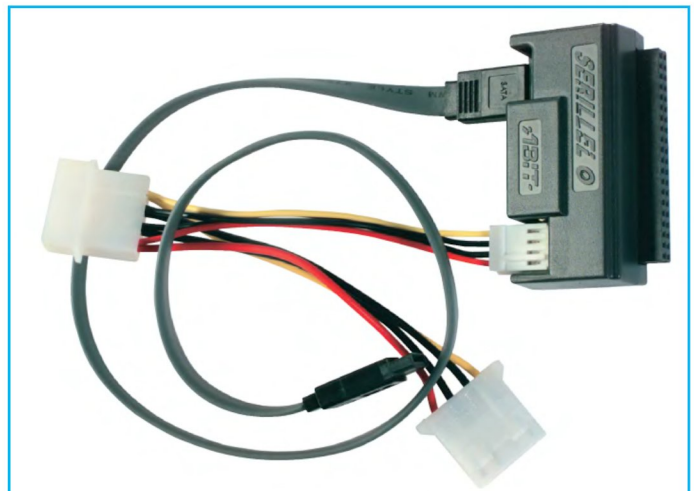
Firstly we used SiSoft Sandra 2003 to get theoretical burst speeds for the drives, but as Sandra is at best a theoretical yardstick, we didn't rely on these numbers too much. Instead, we used the disk benchmarking utility that comes as part of Intel's Performance Evaluation Kit (IPEAK) for a needlessly comprehensive look at the minute levels of drive performance.

We then employed DiskSpeed32, which provides a very detailed look at transfer speeds across the entire drive. As you will see from the results, DiskSpeed32 summed up quite nicely the difference between parallel and serial data transfer.

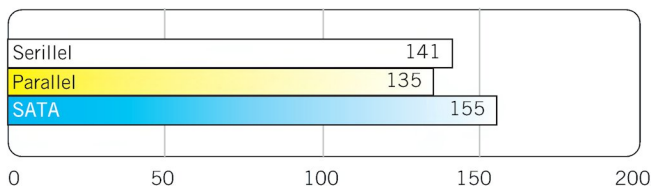
For our real world tests we used the office productivity part of SYSmark2002, after Internet Content Creation refused to run on the SATA drives. We also ran 3DMark2001SE Pro (we used an Albatron Ti4280 AGP 8X GeForce4 Ti4200 card) to get a glimpse at the effect on game performance.

Serial numbers

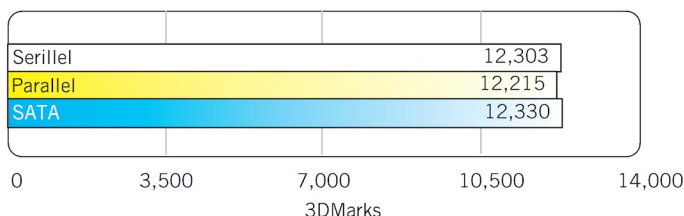
If you cast your eye across the results you will see that the differences between the drives are subtle. They all have the same capacity and hence the same number of cylinders. They all use the same drive electronics for the most part and they all connect through the same PCI bus as each other. One would expect that if any drive was to fall behind it would be the one using the Serilite adaptor, as it



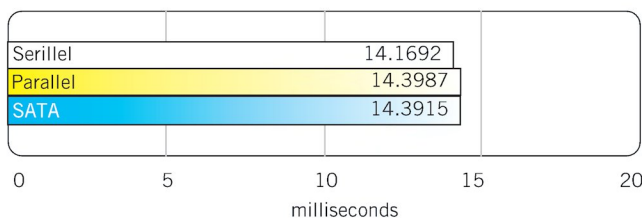
SYSmark2002 – Office productivity



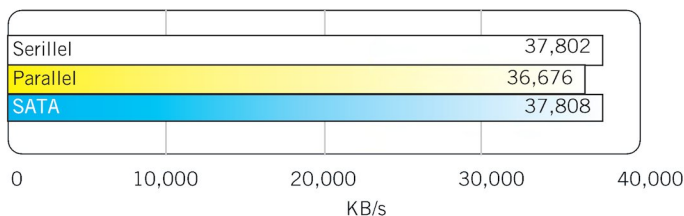
3DMark2001SE Pro – 1,280x1,024



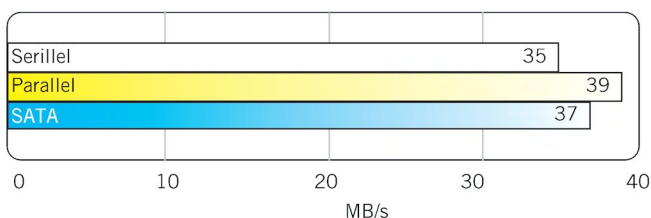
IPEAK average read time



DiskSpeed32 average read speed



SiSoft Sandra2003 – sequential read test



would involve an extra stage in the data translation process.

If we look first at the read tests in DiskSpeed32 we can see an interesting picture. While the SATA and Serielle drives have almost identical scores, the parallel drive falls behind by a small margin. Thankfully, there is a very visual answer to why. Take a look at the graphs from DiskSpeed32. This very thorough benchmark tests each cylinder of the drive. Parallel ATA relies on data flooding down the bus and lacks error correction. This leads to the sloppier picture shown in the Parallel ATA graph. This pushes the average read time out as the drive resends failed data and the like. However, with the serial connection, data is error checked and sent in a single stream, which makes for the tighter DiskSpeed32 graph and higher average read speeds.

The IPEAK tests show virtually no difference between the drives, with a fraction of a millisecond between all of them. It is only under certain circumstances that any performance difference will be seen, and in practical terms none of these results translate into noticeably different performance.

Originally, it was some Sandra results we were told about that got us interested in the performance difference with Serielle adaptors. We used the newly released SiSoft Sandra 2003 file system benchmark to get a ballpark figure of drive performance. The sequential read tests show Parallel beating SATA and Serielle by a small margin. In reality these results are negated by the similarities in the more comprehensive DiskSpeed32 and IPEAK tests rather than any real world variance. Again, any performance difference appears to be negligible.

The suite of synthetic benchmarks showed little difference, but what of the real-world ones? Our tests with SYSmark2002 and 3DMark2001SE Pro were designed to show what, if any, impact on day-to-day performance SATA would have. These tests usually vary surprisingly greatly between different brands of drive (the low memory configuration helps with this), however we did not expect huge variations between the drives tested. This played out with the 3DMark2001SE Pro results coming in with only 115 3DMarks separating the pack. SYSmark2002 is the most disk-intensive of the real world benchmarks that we ran, and in this the SATA drive beat out the others by a noticeable amount, showing with continuous use the slight gains that come from the new signaling methods. Think of it this way: SATA gives a performance gain that translates to 14% faster over an hour long benchmark, which will give an idea of how these slight gains add up.

Why bother?

So, there we have it, proof indeed that SATA is not a miracle cure to slow drive performance, with at best miniscule performance gains to be had. It will not be until we have faster drives that the full 150MB/s speed can be attained, so for now what does SATA offer?

Basically, a slightly higher price tag, restricted range and thinner cables. But do remember that the current scarcity of drives and power cables has meant that we are yet to examine the RAID potential of SATA, where there may be tangible performance gains. SATA drives are currently more expensive than Parallel ATA ones. It remains to be seen what will happen once more drives hit the market but for now you'll pay a bit more. The Serielle adaptors are unfortunately very expensive, but for some motherboard owners they will be the only choice. In that case, go for the SATA drive instead. The thinner cabling does do wonders for not only the airflow but also the aesthetics of case innards, and it is only time before strange case mod SATA cables appear.

If you have SATA ports and can find a suitable drive with SATA then it would be best to go for that over a Parallel model. Next year will mark the release of the first chipsets with inbuilt SATA and this technology will only become more common, with ATAPI devices such as CD burners making the shift next year sometime.

For the hardcore file hungry LAN goer then the hot-plug ability is a huge draw card. With external connections like that packaged with the GA-8INXP now in existence, the quick 'plug and suck' has become a reality. Just walk up to your mate's machine, plug in the drive and backup away.

At long last, SATA is here – a quiet revolution but perhaps the most important for many years. It's only the start: with the server-oriented SATA-II due next year, packing a 300MB/s throughput, and the first 2.5in SATA drives that were demonstrated by Fujitsu at the recent Intel Developers Forum in San Jose.

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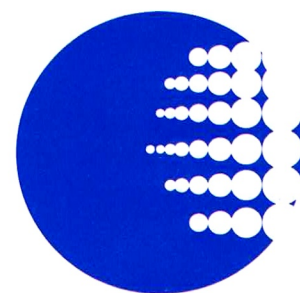


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inc GST

SYSTEM CONFIGURATION

- Soltek KT400 motherboard.
- 512MB Corsair PC3500 RAM.
- 80GB 7200rpm IDE HDD.
- Antec 1080AMG "Performance Plus" Minitower case.
- Samsung COMBO Drive - 12x DVD and 32x10x40x CD-RW.
- PowerColor 128MB ATI 9700 Pro video card.
- Firewire 4 port 1394 card with PowerDirector video editing software.
- Microsoft wireless hardware pack.
- 10/100Mb network card.
- Creative Inspire 4400 4.1 speakers.
- 21" Samsung Syncmaster 1100P+ monitor.
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Flying off the shelf

When it comes to convenience, you can't go past a pre-built PC.

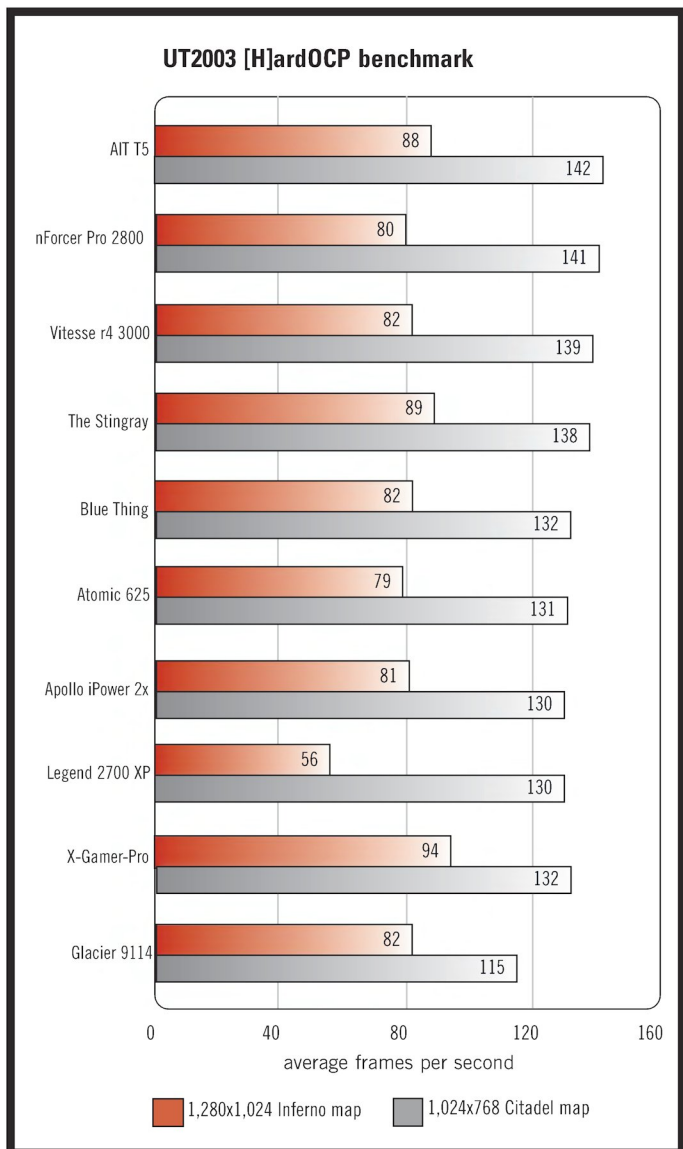
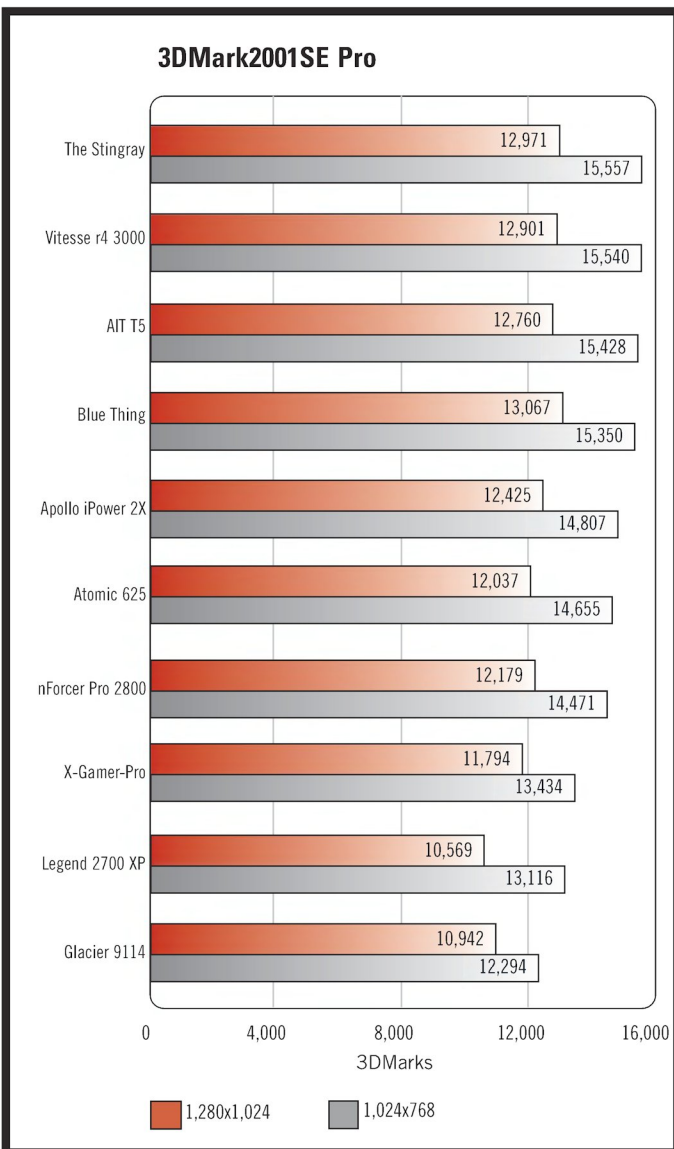
Bennett Ring checks out ten of the best systems that money can buy.

No, you haven't accidentally picked up a copy of *PCs for Parents*. However it is true that *Atomic* doesn't often – if at all – review pre-built, off-the-shelf systems, but we thought it was about time that we took a look at the biggest, baddest mofos built by a variety of companies. Most *Atomic* readers prefer to build their own machines and save themselves a bundle of dosh in the process, but when it comes to purchasing or recommending a system for one of your many relatives/friends/neighbours/geek wannabes, it's often much simpler to go for an off-the-shelf PC. And here's why.

For starters, the drama of making sure all of your components are compatible is usually non-existent in a pre-built PC, provided you don't buy it from Dodgy Brothers Incorporated. It also means that you won't be getting calls at 11pm at night from your Uncle Jake if he accidentally types in 'format c:' at the command prompt. Darn that uncle, darn him to hell. And when it comes to convenience, it's hard to beat a pre-built system. Simply place your

order, and within days a working, fully-specced PC is delivered to your doorstep.

We contacted 25 of the more popular PC builders and asked them to send us the most feature-packed, speed-demon, high-end system that they sell. We imposed absolutely no price ceiling on the entrants, to encourage the builders to go a little crazy. A whopping 15 of these companies chickened out, perhaps due to fears that the *Atomic* testing procedures would show them to be unworthy of your hard-earned dosh. This left us with ten of the meanest PC systems money can buy. So even before the benchmarking began, we knew that the builders of these beasts had the utmost confidence in their machines. We told the builders that if they supplied a system for this roundup, it must be available to buy in exactly the same configuration. So if you decide to buy one of these machines but the manufacturer can't come through with the goods, drop us a line and we'll give 'em hell.



How the hell do we do a PC roundup?

We had never done a PC roundup before, and so we had to devise a totally new method of testing each of the submitted PCs. While Ben's wild suggestion of throwing each PC off a really high cliff to see which one hit the ground in the shortest time would have given us something that looked really cool (mmm. . . exploding PCs), we finally realised that thanks to that silly Newton chap, each machine would score identically. We ended up settling on a variety of benchmarks and examinations of the PCs' construction instead.

The first benchmark to be run was SiSoft Sandra's memory benchmark. What the? Well, this synthetic benchmark proved

to be invaluable in seeing which manufacturer had set up the memory most aggressively, as well as seeing who used the best memory modules.

Due to the fact that the memory subsystem is one of the most temperamental and tweakable areas of the PC, this measurement showed which manufacturers knew their BIOS settings back to front, and accounted for ten per cent of the overall performance score.

The next test was SiSoft Sandra's file system test, which was used to benchmark hard drive performance.

Yes, this is another synthetic benchmark, but we wanted to reward manufacturers who had gone to the trouble of



Features	Blue Thing	X-Gamer-Pro	nForcer Pro 2800	Glacier 9114	The Stingray
CPU	INTEL P4 2.8GHZ	AMD ATHLON XP 2400+	AMD ATHLON XP 2800+	AMD ATHLON XP 2400+	INTEL P4 2.8GHZ
Motherboard	ABIT BE7-RAID	ASUS AV78X	ASUS A7N8X	GIGABYTE GA-7VA	ASUS P4T533
Video card	ATI RADEON 9700 PRO	HERCULES RADEON 9700 PRO	ATI RADEON 9700 PRO	GIGABYTE RADEON 9700 PRO	SAPPHIRE RADEON 9700 PRO
Memory	512MB GENERIC PC3200 DDR-RAM	512MB CORSAIR XMS 3500 DDR-RAM	512MB GENERIC PC3200 DDR-RAM	256MB GENERIC PC-3200 DDR-RAM	768MB RIMM-4200 RDRAM
Sound card	CREATIVE AUDIGY 2	ONBOARD SOUND	CREATIVE AUDIGY 2	ONBOARD SOUND	CREATIVE AUDIGY 2
Hard drive	WESTERN DIGITAL JB 120GB	TWO WESTERN DIGITAL JB 100GB (RAID)	WESTERN DIGITAL 120GB W/ 8MB CACHE	60GB MAXTOR ATA/133	WESTERN DIGITAL 120GB W/ 8MB CACHE
DVD burner	N/A	RICOH MP 5125A DVD+R/RW	PIONEER DVR-A05 DVD-R/RW	N/A	N/A
CD burner	ASUS 48X48X16	N/A	N/A	ASUS 52X52X24X	LITE-ON 48X12X48
DVD-ROM	PIONEER DVD116	SONY 16X DVD-ROM	PIONEER 16X DVD-ROM	ASUS 16X DVD	LITE-ON 48X12X48
CD-ROM	N/A	N/A	N/A	N/A	LITE-ON 16X
Case	LIAN LI PC-6089	KOOLANCE 601 + 5 WATERBLOCKS	THERMALTAKE XASER	AURIGA/ USB	LIAN LI PC-61B WITH SIDE WINDOW KIT
TV-tuner	N/A	N/A	N/A	N/A	LEADTEK TV2000XP
Operating system	WINDOWS XP PROFESSIONAL	WINDOWS XP PROFESSIONAL	WINDOWS XP PROFESSIONAL	WINDOWS XP HOME	WINDOWS XP HOME
Keyboard/mouse	LOGITECH CORDLESS OPTICAL	LOGITECH CORDLESS OPTICAL	LOGITECH CORDLESS OPTICAL	N/A	LOGITECH ELITE KEYBOARD AND MX-500 MOUSE

Features	Legend 2700 XP	Apollo iPower 2X	Vitesse r4 3000	Atomic 625	AIT T5
CPU	AMD ATHLON XP 2700+	INTEL P4 3.06GHZ	INTEL P4 3.06GHZ	INTEL P4 3.06GHZ	INTEL P4 3.06GHZ
Motherboard	EPOX 8K9A2+	INTEL D845PEBT2	ASUS P4T533-R	INTEL D845PEBT2	ASUS P4T533-R
Video card	LEADTEK GEFORCE4 TI4600	GIGABYTE RADEON 9700 PRO	GIGABYTE RADEON 9700 PRO	ATI RADEON 9700 PRO	POWERCOLOR RADEON 9700 PRO
Memory	1GB KINGSTON PC2700 DDR-RAM	512MB GENERIC PC2700 DDR-RAM	512MB KINGSTON RIMM4200 RDRAM	512MB GENERIC PC2700 DDR-RAM	512MB GENERIC PC1066 RDRAM
Sound card	CREATIVE AUDIGY	ONBOARD SOUND	CREATIVE AUDIGY 2 PLATINUM	CREATIVE AUDIGY	ONBOARD SOUND
Hard drive	2 X 80GB WESTERN DIGITAL	40GB SEAGATE BARRACUDA IV	2 X 80GB WESTERN DIGITAL (RAID)	SEAGATE 120GB	TWO WESTERN DIGITAL 80GB RAID
DVD burner	N/A	N/A	N/A	N/A	N/A
CD burner	LITE-ON 48X12X48	N/A	LITE-ON 48X12X48	SONY 48X12X48	SONY 48X12X48
DVD-ROM	LITE-ON 16X	SONY 16X DVD-ROM	LITE-ON 16X DVD-ROM	SONY 16X DVD-ROM	AOPEN 16X DVD-ROM
CD-ROM	N/A	N/A	N/A	N/A	N/A
Case	MARVEL LEGEND	COMPUCON APOLLO ATX	COOLERMASTER ATC-210 VX2	XENON 689	COOLER MASTER ATC-210B VX2
TV tuner	N/A	N/A	N/A	N/A	N/A
Operating system	N/A	WINDOWS XP PROFESSIONAL	WINDOWS XP PROFESSIONAL	WINDOWS XP HOME	WINDOWS XP PROFESSIONAL
Keyboard/mouse	N/A	LOGITECH CORDLESS OPTICAL	N/A	LOGITECH CORDLESS FREEDOM OPTICAL	LOGITECH CORDLESS FREEDOM OPTICAL

040: ATOMIC FEATURE

creating high performance RAID setups, or even those who knew how to get the most out of their IDE drives.

Weighting for this test was ten per cent of the overall performance score – like the memory benchmarks these low weightings represent their lesser value over the remaining benchmarks in the roundup.

Next up was the most commonly used benchmark this side of Uranus: MadOnion.com's 3DMark2001SE Pro, patched to version 330. This synthetic test taxes the graphics subsystem most, although the CPU does play its part.

Thirty per cent of the overall performance score was derived from this benchmark.

The new Unreal Warfare engine is easily the most visually attractive engine currently available on the PC, and as a result can bring a Ninja PC to its grazed knees.

With a little help from [H]ardOCP's UT2003 benchmarking application, we extracted the benchmark results for two UT2003 flyby tests: Citadel at 1,024x768 and Inferno at 1,280x1,024. These different maps were chosen as each is the most taxing at these different resolutions.

The UT2003 botmatch benchmarks were not included due to their inherent inconsistency. The results of the UT2003 benchmark accounted for 30 per cent of the overall performance score.

The final benchmark had to be a real-world applications-based productivity benchmark. Yes, these parts of the test were just as boring as they sound.

The choice was between PC Mark or BAPCo SYSmark2002, which isn't a hard decision to make. While SYSmark2002 does have a few concerns regarding bias towards the P4 over the Athlon, it is still the only viable productivity applications-based benchmark. We would've liked to use SYSmark2001, but this has proven to be very difficult to get running successfully on newer systems.

In fact, even the newer SYSmark2002 benchmark proved to be difficult to get to complete on the Hyper-Threaded Pentium 4 systems.

Every machine equipped with a Hyper-Threading-enabled Pentium 4 simply would not complete SYSmark2002 until we disabled Hyper-Threading via the BIOS. However, Hyper-Threading was left enabled for every other benchmark.

The final performance score, derived from each of these tests, accounted for 50 per cent of the overall score for each PC, as performance was the number one focus of this roundup. What about that other 50 per cent then?

Another 25 per cent of the final score went to build quality. This was broken down into several areas: cabling, airflow/cooling, modifications (Neon, Perspex, blowholes, etc), overall sound level of the PC (a quiet PC is a good PC), and finally Windows setup. Windows setup included driver installations, and the lack of or presence of clutterware and BIOS settings.

Next up was the feature list, which accounted for the final 25 per cent of the score. We wanted to see the most feature-rich beasts possible, so rewarded those builders who had managed to squeeze as much good stuff in as possible. Features that we were looking for included high-end sound cards, CD or DVD burners, RAID, total hard drive and memory capacity, as well as all the other assorted tidbits that go together to make an Uber PC.

Monitors and speakers were not included in the roundup, as we believe *Atomic* readers will have their own ideas about which of these is suitable for their own unique situations.

Price also factored into the equation, and thanks to some tricky Excel work from the spreadsheet Maestro Tim Dean, we ranked each of the machines based on overall bang for buck.

It must be remembered that the manufacturers of these machines generally threw caution to the wind when installing expensive components, so a PC that didn't do too well in this regard probably isn't the best value for money system that the manufacturer builds.

We were quite surprised to see just how closely these machines were matched, especially considering the massive range of prices.

Even the slowest performer wasn't far behind the leader of this high-octane pack.

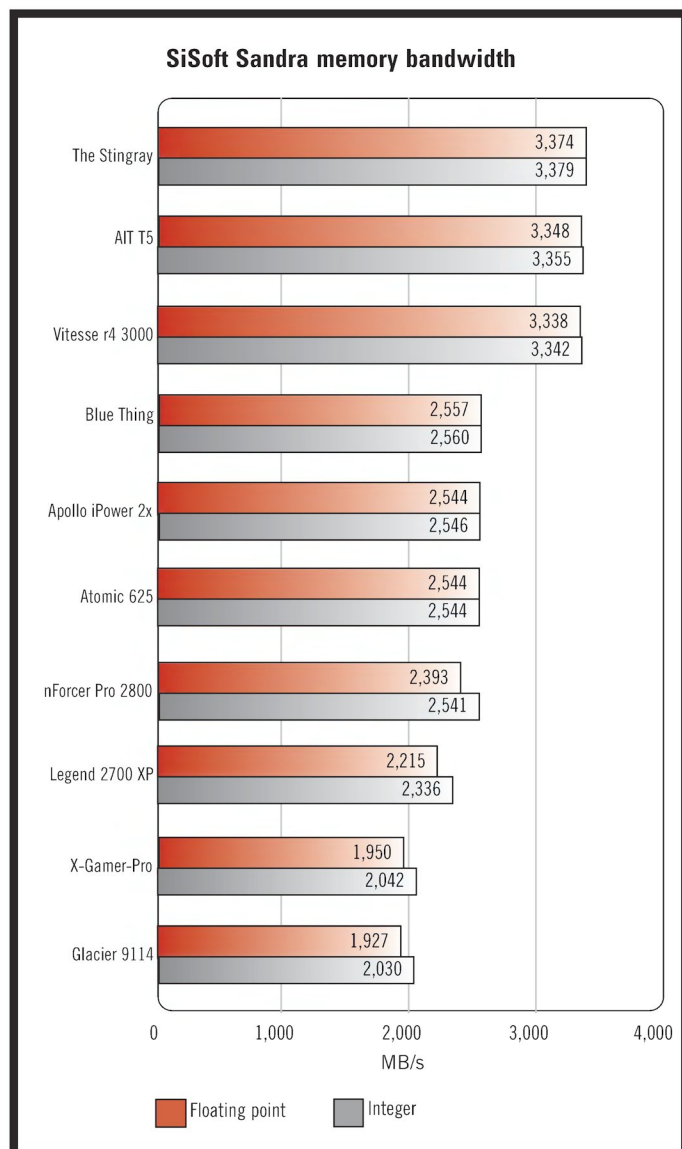
We had originally intended to overclock each of these PCs to see which had the most headroom, but due to the immense amount of time needed to properly overclock ten different PCs, this proved to be an impossible task.

Now, let's take a good hard look at what a cool \$5,000 or so can get you these days.

Rank guide

The '*Atomic* beefiness' score refers to the ranking of each system in terms of the combined ratings for performance, build quality and features.

We're sure you can figure out what the Value for money ranking means . . .



GLACIER 9114*Atomic beefiness #10***Value for money #1****SUPPLIER:** CW Supplieswww.cws.net.au**PHONE:** (03) 5945 2000**PRICE:** \$2,462

This is easily the cheapest machine in the roundup, at half the cost of the most expensive behemoth.

With an Athlon XP 2400+ and a RADEON 9700 PRO handling the work that we gave this machine, the relatively slower CPU saw the Glacier 9114 trailing in the benchmarks, but only by a small margin. In fact, its 3DMark2001SE Pro and Unreal Tournament scores are very respectable for the price, but the fact that this is the only machine in the roundup that couldn't successfully complete BAPCo SYSmark2002 hurt its overall score.

This machine only had 256MB of DDR-RAM PC-3200, and we felt that another 256MB would really help it out, especially when running the system resource terrorist, Windows XP. Compared to the other machines in the roundup, the Glacier 9114 is very feature-lite, with no DVD burners, high-end sound cards or wads of hard drive space in sight. Build quality is quite good throughout, although timid memory timing and an average Windows setup are noticeable. The bland beige box that this machine arrived in also lacks the Vegas crossed with a US Air Force wind tunnel look that most of the other machines have.

The fact that this machine took out the #1 spot for Value for money shows that the builders know how to extract credible performance at a minimum of cost. It's a machine that isn't going to turn any heads, until you fire up one of the latest and greatest PC games, and sit back to watch it purr.

APOLLO IPOWER 2X*Atomic beefiness #9***Value for money #9****SUPPLIER:** Compuconwww.compucon.com.au**PHONE:** (02) 9417 7166**PRICE:** \$4,499

For a machine with a powerful Pentium 4 3.06GHz processor, RADEON 9700 PRO and 512MB of PC2700 DDR-RAM, we were quite stunned to see how poorly the Apollo iPower rated in this roundup. Just how could such a high specced machine find itself up towards the end of the pack?

The 333MHz DDR-RAM seemed to be set up nicely, with an average throughput smack bang in the middle of the crowd. Hard drive speeds weren't quite as solid, trailing most of the other PCs, but its 3DMark2001SE Pro scores helped it recover from this small loss, with the Apollo again falling around the middle of the pack (which, by the way, is less than 700 behind the fastest system, highlighting just how close this competition was). UT2003 was the first benchmark where this machine didn't perform as expected, trailing the leaders by around 10 per cent. When it came to build quality, the Apollo was one of the more disappointing machines, losing marks in modification, cooling and Windows setup areas. The lack of many of the glitzy features that were to be seen on the other machines also didn't do this machine any favours when it came to features. Unfortunately the Apollo didn't redeem itself when it came to value for money, coming in at ninth spot due to its high price of over \$4,000. While this PC didn't do too well in the roundup, the fact that it was among such stellar performers helps to lessen the blow, and there's no denying that it is still a blazingly fast PC.

BLUE THING*Atomic beefiness #8***Value for money #8****SUPPLIER:** AusPC Marketwww.auspcmarket.com.au**PHONE:** (02) 9817 2899**PRICE:** \$4,922

This system is based around the powerful, but not too expensive, Pentium 4 2.8GHz, paired up with the equally impressive RADEON 9700 PRO video card. Talk about a match made in geek heaven. . . This is one of the few machines to include Creative's new Audigy 2, but sadly lacks a RAID hard drive setup or DVD burner. Surprisingly for a non-RAID system, this machine did very well in the Sandra file system benchmark, scoring within spitting distance of the three machines with RAID. This was thanks to its massive 120GB Western Digital hard drive, giving this machine one of the largest storage capacities in the roundup. The Blue Thing also did very well in the remaining benchmarks, placing in the top half for 3DMark2001SE Pro, SYSmark2002 and UT2003. However, a few issues with build quality cost this machine sorely. The first problem we encountered was when the machine stopped functioning and required a full reinstall of Windows – the only machine in the roundup that needed such nurturing. When the machine was returned after a quick Windows reinstall by the manufacturer, the front USB ports and the CD-ROM drive had been incorrectly installed, further reducing its build quality score. While these problems could have been one offs due to a faulty motherboard, they severely disadvantaged the machine in this roundup, where build quality heavily impacted the overall score. It's sad, as this machine offered considerable performance and many noteworthy components.



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- > Intel® Pentium® 4 Processor with HT Technology 3.06GHz
- > Albatron PX845PE Pro II Pentium® 4 DDR Motherboard
- > 1024MB DDR333 Kingston Ram
- > Albatron GeForce4 Ti 4600V 128MB DDR (Video-In Video-Out)
- > 2X80GB ATA133 HDD (Total 160GB)
- > 16X DVD Rom
- > 48x40x12x CDRW
- > Logitech Freedom Pro Keyboard & Mouse
- > Creative Audigy D.E
- > 2X BenQ 17" Silver LCD Flat Panel
- > Microsoft® Windows® XP Professional
- > Motherboard Supports Future Serial ATA & Hyper Threading Technology
- > FREE Comand Antivirus
- > 3 Years OnSite Warranty

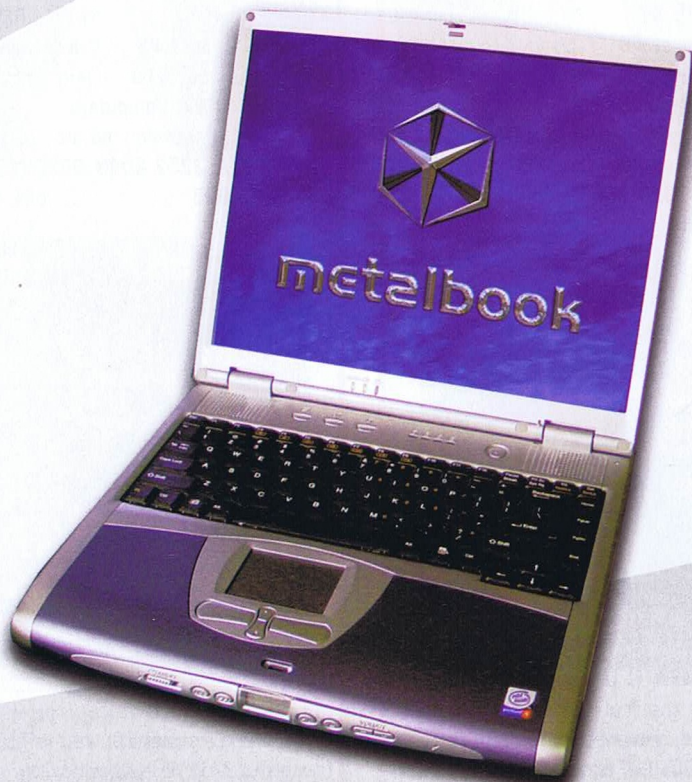
Featuring:

Intel® Pentium® 4 Processor with HT Technology

3.06GHz

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HgF1

SPECIFICATION:

- > Intel® Mobile Pentium® 4 Processor 2.2GHz
With Intel SpeedStep Technology
 - > 1GB DDR SDRAM
 - > ATI 64MB DDR M7-D Radeon 7500 3D Graphics
 - > 40GB Ultra ATA HDD
 - > 4X USB and 1X IEEE1394 Firewire Port Built In
 - > 56K Internal Modem and Fast 10/100 Ethernet Network
 - > DVD/CDRW Combo Drive (8xDVD, 8x4x24 CDRW)
 - > Front Panel Audio DJ with separate power switch
 - > 15" SXGA TFT Display
 - > Microsoft® Office XP Professional
 - > Microsoft® Windows® XP Professional
- Dimension: 330 (W) x 289 (D) x 43 (H) mm
Weight: 3.2 Kg (without Battery)

\$5,759.00

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Microsoft Office XP:

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Excel 2002

Powerpoint 2002

www.microsoft.com/office

Publisher 2002

Outlook 2002

Access 2002



NFORCER PRO 2800

Atomic beefiness #7

Value for money #4

SUPPLIER: Plus Corporation

www.pluscorp.com.au

PHONE: 1800 007 587

PRICE: \$4,195



Arriving in a hotted-up Thermaltake Xaser case with an AMD Athlon XP 2800+, an ASUS nForce2 powered mobo and a RADEON 9700 PRO, the nForcer Pro 2800 had us wondering if Plus Corp had secretly hired an Atomican to build this system.. On top of these already beefy components, Plus Corp threw in a gamut of mouth-watering components. An Audigy 2 helped it gain extra feature points, as did the Pioneer DVD burner and 120GB Western Digital hard drive. Performance was nothing to sneeze at, doing especially well in the UT2003 benchmark with one of the fastest scores at 1,024x768 although its relatively mediocre scores in the other benchmarks dragged it down.

Build quality of this machine is superb, with carefully concealed cabling and excellent overall machine setup. While its performance and build quality are respectable, the lack of added features is the biggest hindrance to this system performing better in the roundup. Not only does it lack some of the flashier extras of the others, but some of the basics were sorely lacking in their level of Uberness. The omission of a PCI soundcard as well as a meagre disk space of 40GB are a couple of areas that we felt could have done with an injection of Oomph juice. In all, the nForcer proved to be a very capable machine, with a nice balance between price and performance, but not quite up there with the best of them.



LEGEND 2700 XP

Atomic beefiness #6

Value for money #2

SUPPLIER: Marvel

Computers

www.marvelcomputers.com.au

PHONE: (02) 9680 9688

PRICE: \$3,695



This machine shunned the RADEON 9700 PRO that is proving to be so popular with the frame rate malnourished minions, instead using the reliable NVIDIA GeForce4 Ti4600 video chipset. Apparently the builders were some of the unlucky few that have had problems getting the RADEON 9700 PRO to play nicely with their hardware, in this case the Epox 8K9A2+ motherboard. As the #2 Value, it's great to see that this machine hasn't sacrificed performance to attain such good value.

At only \$3,495, it's obvious that the use of the Athlon XP 2700+ and GeForce 4 Ti4600 has allowed this system to undercut the cost of most of the other machines. The inclusion of a RAID setup helps this machine in several of the benchmarks, most notable being the Sandra file system benchmark. The slower video card only cost this machine 1,000 3DMarks behind the leader of the pack, but its UT2003 score was noticeably affected by the use of the Ti4600.

When it came to build quality, this machine had one of the highest scores in the whole roundup, showing an eye for detail that many of the others lacked. An astounding 1GB of DDR-RAM, as well as an Audigy sound card and Lite-On CD burner helped to round out this machine's features. Overall, the Legend 2700 XP was a rock solid system with components that were obviously well thought out.



X-GAMER-PRO

Atomic beefiness #5

Value for money #10

SUPPLIER: MMD Computers

www.mmdcomputers.com.au

PHONE: (07) 3252 4009

PRICE: \$5,995



If you want a machine that is built from the ground up for overclocking, you can't go past this little ripper. This is due to the awe-inspiring Koolance 601 tower with built in water-cooling, along with a jaw dropping five waterblocks. Yes, five waterblocks: one on the CPU, one on the video card, another on the motherboard Northbridge and finally two on the RAID hard drive setup. Its relatively slow Athlon XP 2400+ CPU is given a helping hand by the brute force of a RADEON 9700 PRO, and helps to keep the price quite low, especially when compared to the 3.06GHz P4. The inclusion of Corsair XMS3500 DDR-RAM is welcomed by our inner tweaker, but this had not been correctly configured, resulting in a very low result in Sandra's memory benchmark. This major flaw was probably our only complaint about the entire setup of the machine, with every other major area being tweaked correctly and thoroughly. Posting the highest UT2003 score at 1,280x1,024 resolution, the X-Gamer-Pro has the grunt to keep your games running silky smooth, but its 3DMark2001SE Pro score was obviously impacted by the relatively slow Athlon XP 2400+. While this is one of the most expensive machines in the roundup, its wealth of components, totally sweet case and overall high performance and quality construction means that the final cost really is justified.



THE STINGRAY

Atomic beefiness #4

Value for money #7

SUPPLIER: Scorpion Tech

www.scorpntec.com.au

PHONE: (03) 9886 1615

PRICE: \$4,999



Tucked away inside the Lian Li PC61B case was a range of goodies that would make even the most unexcitable geek start hyperventilating. A 2.8GHz P4 sits alongside 512MB of excruciatingly expensive RDRAM, housed on the impressive ASUS P4T533 motherboard. An Audigy 2 pumps out the highest quality sound you can get on your PC, while the Leadtek TV200XP tuner card is equally welcome.

The 120GB Western Digital hard drive should provide you with plenty of storage space for months to come, but we would have preferred a couple of 60GB drives in a RAID configuration. Yes, demanding we are.

By now you can probably guess which video card this system had – what else but a RADEON 9700 PRO would feel at home next to such esteemed companions?

The assorted range of high-end components obviously helped this PC out in the performance department, posting the highest 3DMark2001SE Pro score, and the second highest average UT2003 frame rate, making this one of the fastest systems in the roundup.

The overall setup and tweaking of this machine was excellent, although it left a little to be desired when it came to cabling and airflow.

The Stingray is not the greatest in the hip pocket arena, but we can forgive it for these faults considering the impeccable pedigree and range of components within, as well as its screaming game performance.



ATOMIC 625

Atomic beefiness #3

Value for money #5

SUPPLIER: Xenon

www.xenon.com.au

PHONE: 1300 888 030

PRICE: \$4,816



Like all of the fastest machines in the roundup, this system is based around the speedy combination of a 3.06GHz P4 and a RADEON 9700 PRO.

However, this machine forgoes the use of expensive RDRAM, instead settling for the much more wallet-compatible DDR-RAM. The entire system is housed within a Thermaltake Xaser case, and also has a prOn-welcoming 120GB hard drive. An Audigy provides your ears with all that they could desire, while a Sony CD-RW should satisfy any burning desires you might have. While this machine had the lowest Sandra file system results of the entire roundup, the rest of its results were very respectable, falling around the middle of the pack for most tests, which means it was a meagre 1,000 points behind the fastest machine in the roundup. What really stood out about this machine is its build quality; obviously Xenon knows how to thoroughly set up a PC from its years of high-end PC experience. In fact, this machine placed second overall when it came to build quality, reflecting the excellence of the construction and tweaking within.

Considering this machine did so well, it's refreshing to see that it also placed well in the value for money rankings, taking out the number five position. Xenon has proved it knows what it takes to make a desirable PC system.



VITESSE R4 3000

Atomic beefiness #2

Value for money #6

SUPPLIER: Emagen

www.emagen.com.au

PHONE: 1300 880 070

PRICE: \$5,199



We're not sure how it happened, but this machine is almost identical to the PC from Australia IT. That probably explains why these two machines took out the number one and two spots in the roundup. Arriving in a sexy Cooler Master ATC-210 case, with a P4 3.06GHz and RADEON 9700 PRO helped to ensure that this was the second fastest machine in the roundup. Memory wise, 512MB of RIMM 4200 RDRAM helped this machine pull away from the rest of the pack in the memory bandwidth and SYSmark2002 benchmarks, and the RAID-configured hard drives couldn't have hurt its performance either.

This machine recorded one of the highest UT2003 results at 1,024x768, and was within a bee's willy of the leading 3DMark2001SE Pro score. While it did exceptionally well in the Internet Content Creation part of the SYSmark2002 benchmark, its result for the Office Productivity part of the test was surprisingly low. When it came to build quality, the Vitesse r4 3000 set the benchmark that the others could only aspire to, scoring second out of the ten machines on test. Everything about the way this machine was set up reeked of attention to detail, right down to the smallest BIOS setting.

Feature-wise this machine also did not disappoint. As the number two overall performer, the Vitesse r4 3000 is a machine that will keep even the most picky PC buyer happy for many years to come.

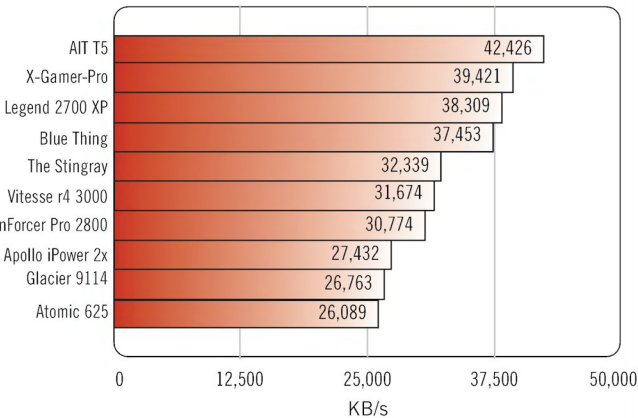


AIT T5
Atomic beefiness #1
Value for money #3
SUPPLIER: Australia IT
www.australiait.com.au
PHONE: (03) 9543 5855
PRICE: \$4,990

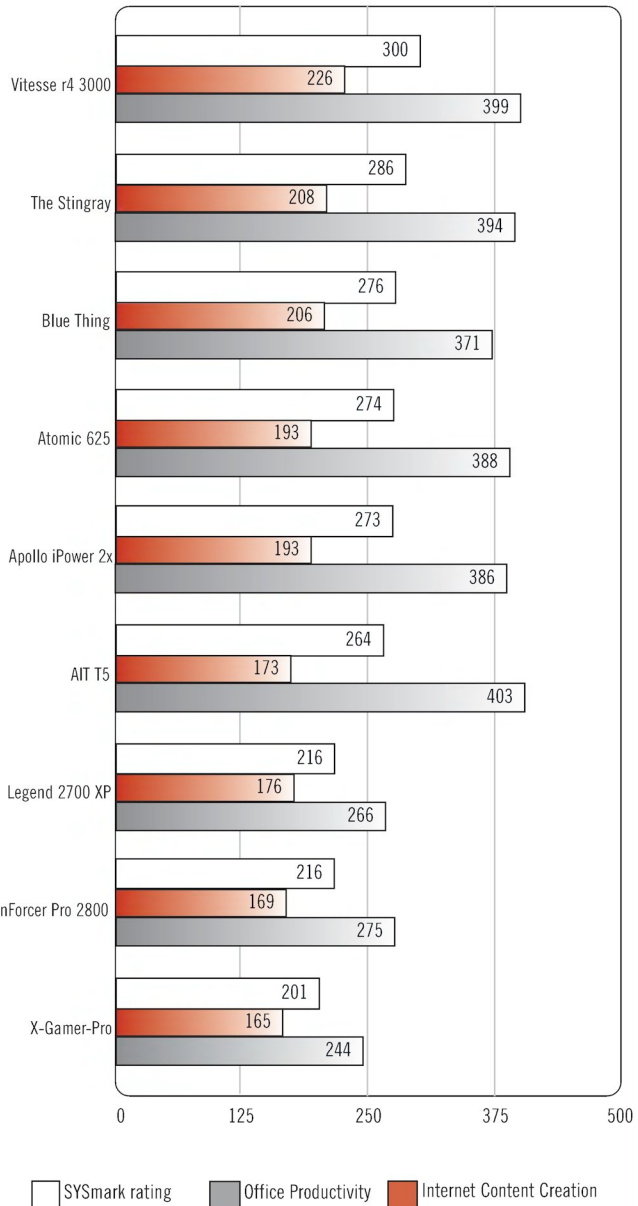


You're probably not too surprised to hear that this machine was built around the 3.06GHz P4 with a RADEON 9700 PRO, but the inclusion of both PC1066 RDRAM and a RAID hard drive setup helped it pull away from the other machines that also featured the P4/RADEON combo. These components are tucked away within the excellent Cooler Master ATC-210B-VX2 case, and ensured that this machine was the fastest of the lot when it came to raw performance. A perfect ten out of ten for build quality also helped this machine take out the number one position. While all of the machines in the roundup were set up to a level we'd expect in an enthusiast level PC, the T5 didn't have a single flaw, from the cooling right through to the Windows setup. It's obvious to us that the builders at Australia IT take particular pride in their work, and it shines through in the overall quality of this machine. This machine lacked a couple of the features we'd come to expect for the price, such as a DVD burner and a high-end sound card, and the reliance of the onboard motherboard sound chipset was perhaps the only flaw of this system. For an extra couple of hundred dollars this problem could be solved simply. In all, the T5 is an incredibly fast system, with an impeccable build quality, and a range of rich high-end performance features such as RAID and RDRAM. The T5 is without doubt the best PC money can buy.

SiSoft Sandra file system benchmark



BAPCo SYSmk2002



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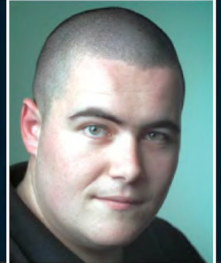




REVIEWS

Excellence in eloquence

As the year comes to an end, John Gillooly feels it's the perfect time to look back on the amazing marketing speak experienced in 2002.



Perhaps the most frustrating thing to understand in this industry is when a company takes a cool codename that we have been writing about for months, hands it to the marketing department and it comes out well-cooked with a heavy sprinkling of lameness. Just think back over some of the biggest disappointments this year: Dolphin became GameCube, Granite Bay became e7205, Northwood was relegated to a mere suffix of A or B, NV30 turned into GeForce FX, and 3GIO into PCI-Express.

This phenomenal move from catchy to bland has sullied the industry for so long that it's high time to make a stand. In order to make the wider world wake up to the often nonsensical realm of marketing speak, *Atomic* has devised some special awards for excellence in marketese.

Over the course of 2002 we have witnessed first hand many moments of lucidity and sheer marketing brilliance. It has been tough trying to narrow things down to the final selection but I am sure you'll agree that our final choices exemplify the art of creative writing.

The first award goes to hardware marketing Website of the year. But before I spoil everything and announce the winner, I'd like to make a special mention of the two sites that won the runner-up prizes. Second runner-up is Microsoft for its *Confession of a Mac to PC convert* article on its Website, which was a heartfelt tale of a young woman who had made the switch from Mac to PC. It was all well and good until some investigative journalism uncovered the truth: not only was the photo taken from a file shot, the woman in question was an employee of a PR company hired by Microsoft.

First runner-up in what was a very tight race goes to ABIT for its online interview about MAX motherboards. In an outstanding piece of comprehensive quizzing the article talked not only to Charlie, lead designer of the MAX motherboards, but also to MAX himself.

But what did this plucky motherboard have to say for himself? Here is a little quote *'I'm like the beautiful girlfriend you've always wanted who also cooks, cleans, mows the lawn, pays the bills AND lets you play CS all night . . .'*

But there can only be one winner, and that awards goes to SiS' Website www.xabre.com. When we first looked at the Xabre cards we did not realise that it had such a legacy. However, a quick trip to the Website cleared up a lot of the history of the Xabre – right back to ancient history. For example, did you know that *'For 500 years, demons terrorized the world of human vision with omnipresent control or that . . . Xabre entered the forest of visual fantasy bordering on the land of the demons, where he discovered the BX8 twin sword . . .'* Well within the Xabre Website lies one of the greatest fantasy epics of our time, now with added pixel shaders, and due to sheer popularity with us all, wins the inaugural *Atomic* award for hardware marketing Website of the year.

Our second award goes to product name of the year. After seeing hundreds of products over the past year we consistently find one area in which the art of marketese is light years ahead of the competition: the world of 3D.

We have one runner-up in this category from the CPU world and one from the GPU world. The CPU runner-up goes to the Intel product that has acted to revolutionise the way we look at performance on notebooks: the Mobile Intel Pentium 4 Processor-M. Note the use of both 'Mobile' and the '-M' suffix, a moment of sheer brilliance.

The other runner-up award actually goes to two products launched by NVIDIA on the same day. After major confusion between various types of GeForce4 MX and Ti cards when first launched, NVIDIA followed this by releasing updated AGP versions. Of course, a new moniker was needed, so the catchy codename NV18

turned into *NVIDIA GeForce4 MX-440 GPU with AGP 8x* and NV28 became *NVIDIA GeForce4 Ti4200 GPU with AGP 8x*.

But the winner by a landslide is Gainward for its outstanding development of long product names. We have given it to a card that actually uses one of the runner-up *NVIDIA GeForce4 MX-440 GPU with AGP 8x* chips, and that card goes by the catchy name *Gainward GeForce4 Powerpack! Pro/600-BX XP Golden Sample*. This stringing together of seemingly unrelated buzzwords is a major strength of Gainward and should only get better as time passes.

However, by far the most outstanding example, our grand winner comes not from the hardware realm but from the gaming world. I know this is usually a hardware focused rant, but I am sure you will appreciate the sheer magic of the tagline of Simon and Schuster's press release for the latest installment in the Joint Chiefs of Staff endorsed anti-terrorist realtime strategy series, *Real War*. This mid-September press release winged its way into our inboxes with the amazing title *Osama be Startin' Somethin'! Destroy the 'Axis of Evil' in Forthcoming PC Game 'Real War: Rogue States'*. We were particularly impressed by the delightful Osama be Startin' pun on Osama Bin Laden's name, and also the whimsical Startin' Somethin'!, indicating that while the rise of, and subsequent war on, terrorism may be a horrific indicator of disharmony among the peoples of the world, it is also delightfully whacky at the same time.

And so the year comes to a close and we wait for another year of buzzwords and zany acronyms to emerge. This has all been firmly tongue in cheek of course and big thanks go out from all of us at *Atomic HQ* to the hardware companies, PR and Marcom people, and everybody else that goes to extremes to make sure *Atomic* stays right on the cutting edge of maximum power computing. □

Atomic benchmarks

At *Atomic*, it is our primary intention to give you the final word on the latest in hardware and PC technology. An integral part of determining the performance of a particular piece of hardware is benchmarking, and this is something that we take very seriously in the *Atomic* Labs.

SYSmark2002

SYSmark is a product of the collaboration between industry group BAPCo (www.bapco.com) and MadOnion.com (www.madonion.com). It is one of the next-generation application benchmarks and is designed to more accurately replicate the day-to-day workload that a system is subjected to. The focus of the benchmark is on Internet Content Creation and Office Productivity tasks, in order to generate a final performance rating.

Unreal Tournament 2003

UT2K3 is the latest and greatest first person shooter from Epic. The game makes use of the new Unreal Warfare engine, and as such is a perfect benchmark for system performance. We use HardOCP's (www.hardocp.com) benchmarking utility to run a series of flyby benchmarks at varying resolutions to test performance. The utility also features support for a low resolution/high geometry CPU test. Results are in average frames per second.

3DMark2001SE Pro

3DMark2001SE Pro from MadOnion.com is the next progression of the popular benchmark utility. It also uses the MAX-FX engine and heavily emphasises DirectX 8.1 functions, including programmable shaders. The results are not comparable with results from 3DMark2000 Pro.

Serious Sam: SE

Serious Sam: The Second Encounter is used for testing OpenGL performance. For game tests we use the Cooperative demo, which outputs an average framerate trimmed of excessive peaks.

It also contains a fillrate test, which outputs fillrates for various texturing methods and is useful for making comparisons between video chipsets.

HSF testing

To test heatsink fans, we use our Athlon XP test bed, which makes use of an internal temperature diode. SiSoft Sandra 2002 is run in looping burn-in mode, with both CPU tests selected for 30 minutes, after which the load temperature is recorded. The CPU is then left to idle for 30 minutes before the idle temperature is taken.

Quake 3: Arena *AtomicMPC* demo

Quake 3: Arena (Q3A), from id Software, is the very popular first person shooter, and represents widely used OpenGL gaming technology. Q3A has a built-in benchmarking utility and built-in demos that can test graphics card performance. These demos are fairly simplistic, so we developed our own *AtomicMPC* demo that pushes the hardware as far as possible.

Other benchmarks

Sometimes we need to break down the tests into more specific areas, such as hard disk performance, memory performance or a particular facet of 3D, such as T&L. We can draw on a vast number of applications, games and dedicated benchmarks such as CD Speed 99, DisplayMate, Dronez, MDK2, or Adaptec ThreadMark for such tests. We also use a Lian Li temperature probe from Anyware (www.anyware.com.au) for tests that involve the measurement of temperatures, such as HDD heatsinks.

Atomic Hot Award

The *Atomic* HOT award is given only to the most kickarse products to hit the labs, ones that score 9 or greater. The ones we'd want.



Atomic testbench specs

Both test systems use Windows XP Professional with Service Pack 1, DirectX 8.1 and the latest chipset and video drivers.

- AMD Athlon XP 1800+ system – ASUS A7V266-E motherboard (supplied by CASSA: www.cassa.com.au)
- Intel Pentium 4 2GHz – ABIT BD7II-RAID motherboard (supplied by ABIT: www.abit.com.tw)

Common components

- Samsung 256MB PC2700 DDR RAM (supplied by CASSA)
- Samsung 256MB PC800 RDRAM (supplied by CASSA)
- Hercules Prophet II GTS 32MB (supplied by Guillemot: <http://au.hercules.com>)
- 64MB Apacer memory keys (supplied by Anyware: www.anyware.com.au)
- Hercules Prophet II GTS 32MB (Supplied by Guillemot: www.hercules.com)
- Sound Blaster Live! Player (Supplied by Creative Labs Australia: www.creaf.com)
- ASUS 52X CD-ROM (supplied by CASSA)
- Belkin PCI FireWire card (supplied by Belkin: www.belkin.com.au)
- Belkin PCI USB 2.0 card (supplied by Belkin)

Benchmark settings

3DMark2001SE Pro

- 1,024x768; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.
- 1,024x768; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.
- 1,600x1,200; 16-bit colour; 16-bit textures; 16-bit Z-buffer; triple frame buffer.
- 1,600x1,200; 32-bit colour; 32-bit textures; 24-bit Z-buffer; triple frame buffer.

Quake 3: Arena *AtomicMPC* Demo

All tests use Quake 3: Arena 1.27g and our custom Q3A demo recorded by the *Atomic* staff.

- CPU testing: 320x240; maximum geometry detail; minimum graphics settings; high sound quality.
- Graphics cards: Low quality – 1,024x768; normal quality graphics settings; sound disabled.
- Medium – 1,280x1,024; maximum graphics settings; with all game sound disabled.
- High – 1,600x1,200; maximum graphics settings; sound disabled.



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Excalibur Radeon™ 9000

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- AGP 4x/2x
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Excalibur Radeon™ 7500

- 64MB/128MB DDR memory
- AGP 4x/2x
- TV-out, DVI, Secondary VGA (optional)



Excalibur Radeon™ 7000

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Excalibur Rage™ 128 PRO

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Framerate

This month's magic number is eight – with a full hand of AGP 8x-supporting video cards tested for Framerate. While the RADEON 9700 PRO is still untouchable, take a look at the mid-range battle developing between the GF4 Ti4200 and the RADEON 9500 PRO.



HIS Excilibur RADEON 9700 PRO

SPECIFICATIONS: ATI RADEON 9700 PRO; 128MB DDR-RAM; AGP 8x; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 325MHz **MEMORY SPEED:** 620MHz **PRICE:** \$719
WEBSITE: HIS www.hightech.com.hk **SUPPLIER:** AKA www.akatech.com.au

Damn the RADEON 9700 is a good chip. The HIS Excilibur RADEON 9700 PRO is, like nearly all the other cards on the market, actually made by ATI and then packaged with a custom heatsink. Like the other RADEON 9700 PROs, HIS' offering shows the best performance on the market and is a worthy addition to any system.



Sapphire RADEON 9500 PRO

SPECIFICATIONS: ATI RADEON 9500 PRO; 128MB DDR-RAM; AGP 8x; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 275MHz **MEMORY SPEED:** 540MHz **PRICE:** TBA
WEBSITE: Sapphire www.sapphire.com.tw **SUPPLIER:** Achieva www.achieva.com.au

The new chip on the scene can be found dwelling on Sapphire's RADEON 9500 PRO. This card uses a normal RADEON 9700 level eight-layer PCB, which makes for more stability when overclocking. While the date is still unknown, Sapphire and other manufacturers will be transitioning the model to a less complex PCB.



Albatron Ti4280PV

SPECIFICATIONS: NVIDIA GeForce4 Ti4200 with AGP 8x; 128MB DDR-RAM; D-Sub; S-Video TV-out; VIVO; DVI.
CORE SPEED: 250MHz **MEMORY SPEED:** 513MHz **PRICE:** \$429
WEBSITE: Albatron www.albatron.com.tw **SUPPLIER:** QTD www.qtd.com.au

Albatron has followed up from its beastly Ti4200 Turbo card with the Ti4280PV, an AGP 8x GF4 Ti4200 that also features video-in/video-out support via a dongle. Unlike the previous offering, the card uses a fairly standard PCB layout and an NVIDIA reference heatsink design.



MSI Ti4200-VTD8x

SPECIFICATIONS: NVIDIA GeForce4 Ti4200 with AGP 8x; 128MB DDR-RAM; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 250MHz **MEMORY SPEED:** 513MHz **PRICE:** \$429
WEBSITE: MSI www.msicomputer.com.au **SUPPLIER:** MSI www.msicomputer.com.au

MSI's AGP 8x offering in the GeForce4 Ti4200 range is an interesting-looking beast, with the red PCB dominated by a huge copper heatsink that cools the core and the TSOP memory chips, both front and back. This model also features video in/video via a dongle bundled with the card.



Albatron GF4 MX 440 AGP 8x

SPECIFICATIONS: NVIDIA GeForce4 MX 440 with AGP 8x; 64MB DDR-RAM; D-Sub; S-Video TV-out; DVI.
CORE SPEED: 275MHz **MEMORY SPEED:** 512MHz **PRICE:** \$229
WEBSITE: Albatron www.albatron.com.tw **SUPPLIER:** QTD www.qtd.com.au

The GF4 MX 440 AGP 8x is Albatron's budget card, and is based upon NVIDIA's refreshed MX chip. Although outmatched, the MX 440 GPU with AGP 8x does have the benefit of higher clock speeds than the previous generation and BGA RAM rather than the cheaper TSOP RAM packaging.

Video cards

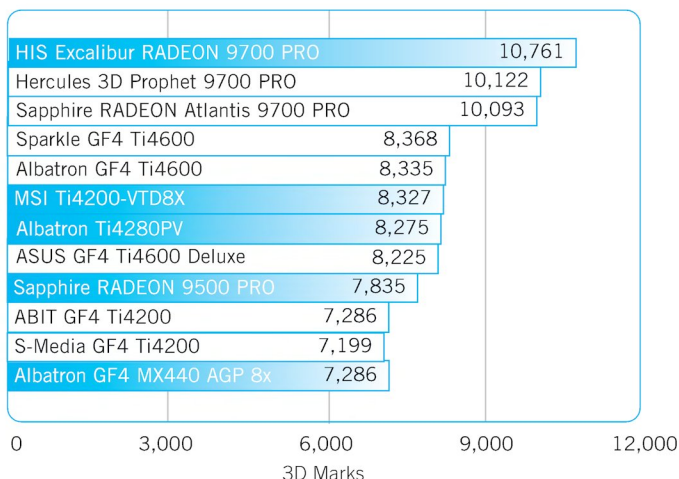
While the big talk in graphics at the moment revolves around the GeForce FX, the steady march of ATI towards dominance continues. Joining the RADEON 9700 PRO cards that we have tested over the past few months in Framerate is the first of the RADEON 9500 PRO cards to hit the *Atomic* labs.

Also starting to appear is NVIDIA's new AGP 8x range of chips. We have seen AGP 8x GeForce4 MX cards before, but the AGP 8x version of the GeForce4 Ti4200 has also hit the scene. In the next few months we may well also see a new GeForce4 Ti4800, an AGP 8x variant of the old GeForce4 Ti4600.

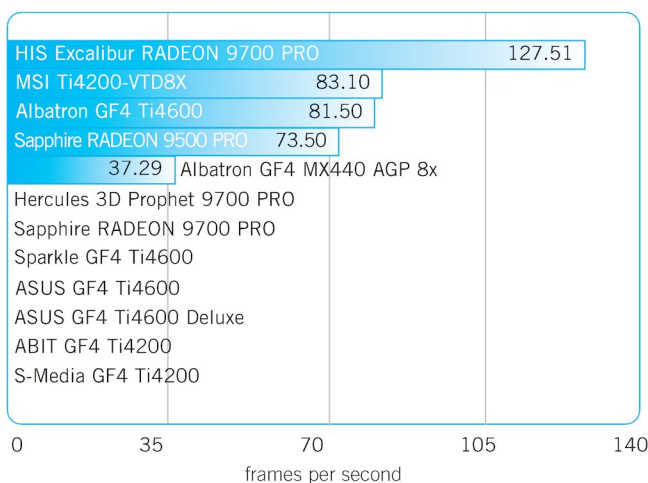
This month we are transitioning the benchmarking in Framerate away from Serious Sam SE to Unreal Tournament 2003. Because we keep results from previous months on the graphs as a comparison, cards tested in the past do not have UT2003 scores, so there will be some gaps on that graph for a month or two.

We have now also combined the budget and performance video cards into the same graph. This makes for easy comparison between all members of the diverse performance spread that makes up the video card market.

3DMark2001SE Pro – 1,280x1,024



UT2003 – 1,280x1,024 high quality



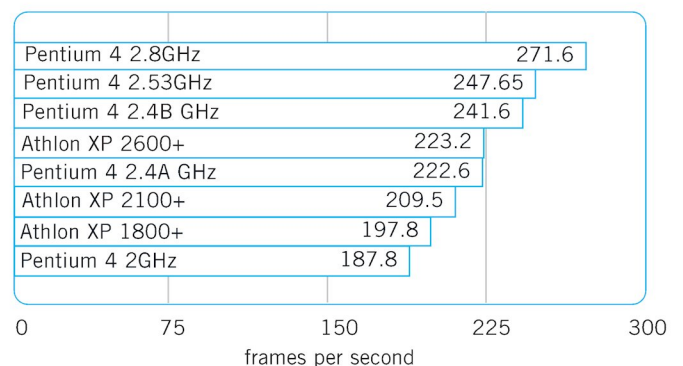
CPUs

It has been a watershed year for the ongoing stoush between AMD and Intel. While AMD has slowed down its product release cycle, with little sign yet of the 333MHz FSB Athlons that it announced a couple of months ago, Intel is keeping up the pace of the last year, pumping out new speed grades and minor tech boosts to the Pentium 4 at regular intervals.

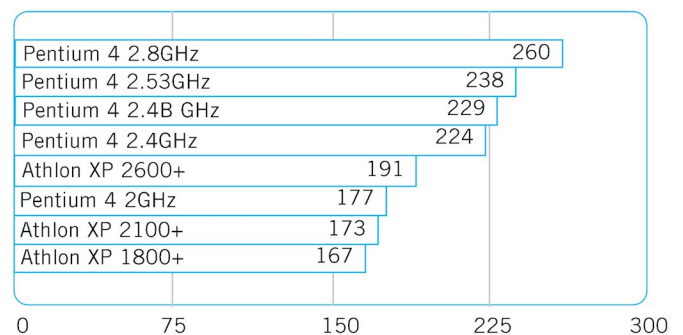
Over the year Intel has regained a lot of respectability among the performance enthusiasts, thanks to improved performance, good motherboard support and some very overclockable chips that have made their way to market. Speaking of which, over the next few months we should start seeing low-speed C1-stepping Pentium 4 chips filtering into the market. You can identify a C1-stepping P4 because it has a recommended core voltage of 1.525 volts rather than the 1.5 volts of previous generation Pentium 4 chips. AMD still has a strong, loyal support base, but the future of the chip maker rides on the delayed launch of the Athlon 64 (the final name for the Clawhammer core) and Opteron CPUs sometime early in 2003.

Next year will definitely be the most important one in AMD's history. It is no secret that most tech companies have been hurting financially, and while desperation is far from setting in, Athlon 64 and Opteron will make or break AMD. On one hand this is AMD's first big chance to take the initiative in the marketplace by introducing 64-bit computing on the desktop years before other companies plan to do it, but if the Hammer core fails to live up to the public's expectations it could be the straw that finally breaks AMD's back, which would be a bad thing for an industry dominated by two players.

Quake 3: Arena – CPU settings



SYSmark2002 – rating



Jaton Video-158PCI-64Twin



AGP 8x may not deliver many real-world gains over AGP 4x, but any form of AGP provides better bandwidth than the old PCI bus. This has become even more apparent as the complexity of video cards has increased and the background data transfers over the bus have become greater.

However, there is still a demand for PCI video cards. This demand does not translate into high-end 3D because of the bandwidth limitations, but there is still a definite niche for PCI video cards, especially on older integrated motherboards that lack an AGP slot.

Until now, the most advanced PCI video cards that we had come across were RADEON 7000 or SiS315-based. However, as most manufacturers plunge headlong into AGP 8x, Jaton has seen the need for PCI video and come up with a GeForce4 MX 440 card that uses a PCI interface, the Jaton Video-158PCI-64Twin.

Because of the bandwidth constrictions this card has little pretence of being a gaming solution above and beyond satisfying

the casual gamer (and does much better than integrated solutions for this task) who is happy to crank down the detail.

For example, in 3DMark2001SE, the Jaton PCI MX440 scores 2548 at 1,024x768, which is more than 3,500 3DMarks behind one of the new AGP 8x MX cards. In Unreal Tournament 2003 the Jaton Video-158PCI-64Twin delivered playable average frame rates of around 45fps, with low detail settings and at 1,024x768 resolution. We double checked these results, by the way.

Thankfully, the card also supports dual monitor output, which ups the functionality of the card and makes for a tasty alternative to the others on the market. The chipset would be great for a home theatre PC, however the card lacks a TV output, which would enhance the product even more.

Those searching for a PCI video card that doesn't involve reverting back to the 3D Stone Age.

It is much slower than the AGP 8x equivalents, but faster than competing PCI solutions. This is definitely targeted at a niche market, and those in that niche should rejoice.

SPECIFICATIONS

NVIDIA GeForce4 MX440 GPU; PCI interface; dual D-Sub outputs; and 64MB DDR-RAM

WEBSITE: Jaton www.jaton.com.au

SUPPLIER: Jaton www.jaton.com.au

PHONE: Jaton (03) 9873 3999 PRICE: TBA

8/10

Jaron Deluxe watercooling kit



Bringing water cooling to the masses, this kit includes nearly everything you could ask for to get the full H2O feeling.

A Pondmaster 1000 pump pushes the water through the system, and is incredibly quiet while doing so. An IceCool

Radiator is also included, which has mounting brackets for two 120mm fans, but unfortunately these fans aren't included in the kit. It's quite a large radiator, at 260mm by 160mm, so you'd be wise to check that you will be able to fit it inside your case. One and a half meters of Tygon hose should be more than enough pipe to rig up this kit in even the biggest of PCs.

The really cool stuff has to be the set of water blocks included in this kit: there's a Deep Freeze CPU water block, as well as an Esky GPU water block for your video card and another Esky water block for your motherboard's Northbridge.

Each is built entirely from Copper, and has a smooth and flat surface. The only problem we could find with these is the locking mechanism for the CPU water block, which is prone mounting the water block at an angle – not the best for cooling, and at worst could leave you with a bad case of the crunchies.

Building and filling the system with water was a breeze, taking less than 20 minutes to get to a fully operational state. The hoses were quite difficult to attach to the various pieces, but in the long run you'll appreciate this as it's less likely to spring a leak. We ran the system continuously for three days and there wasn't a single bead of water leaking from it, which is fairly reassuring.

To test this kit, we installed it on the mighty Chernobyl testing rig, with wattage set to 100W. A GlobalWin FOP-38 and the awesome Thermalright SLK-800 were tested for comparison. The FOP-38 reached a scorching 81°C, while the Thermalright faired much better, peaking out at 46C. And then there was the water cooler. With a peak temperature of 38°C, it's obviously a much more efficient cooler than the two air coolers tested.

This kind of performance isn't cheap, at around \$500, but it's the kind of cooler that will last many years, with water blocks interchangeable as needed. If you can afford it and can overlook the imperfect CPU mount, this kit is recommended based on its ease of use and excellent performance.

SPECIFICATIONS

CPU; GPU and Northbridge Copper water blocks; 1.5M Tygon hosing, and Pondmaster 1000 pump.

Website: Jaron www.jaron.com.au

Supplier: Below-0 www.below-0.net

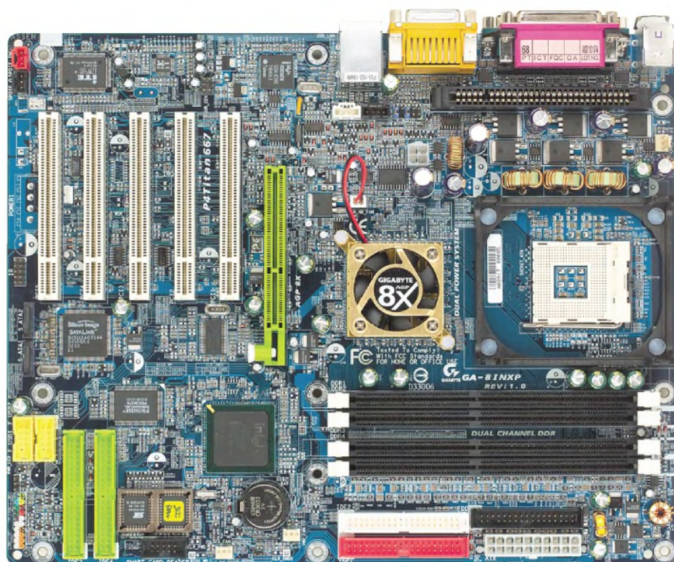
Phone: Below-0 (07) 3348 2155 PRICE: \$530

8/10

Gigabyte GA-8INXP



RDRAM is dead and John Gillyooly couldn't be happier.



A new battleground is emerging in the Pentium 4 performance war. Although Intel has managed to increase the performance of its DDR chipsets to almost match that delivered by RDRAM, it has never been able to deliver a solution that conclusively outscores Rambus' proprietary memory technology.

However, deep in the depths of the Intel labs, engineers have been beaver away on a workstation chipset codenamed Granite Bay, a chipset that marks the first appearance of dual-channel DDR for the Pentium 4, following on from a somewhat lacklustre implementation of the concept by NVIDIA with the nForce chipset.

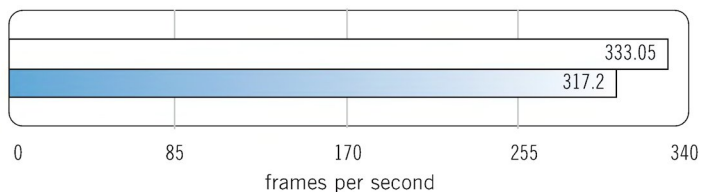
Granite Bay has now been released under the decidedly unsexy model number e7205. It marks not only the addition of dual-channel DDR, but also the first release of AGP 8x support on an Intel chipset. The chipset's Southbridge is the USB 2.0-supporting ICH4, which debuted a few months ago on the i845E and i845G chipsets.

Dual-channel DDR is an exciting concept because it delivers the exact amount of bandwidth desired by the Pentium 4 – something only RDRAM has been able to deliver before now. This is achieved by running DDR266 on two channels, effectively combining the channels to deliver 533MHz speed, which matches the FSB of the Pentium 4 perfectly. Or to put it in bandwidth terms, the e7205 has 4.3GB/s memory bandwidth, equal to the 4.3GB/s of the FSB.

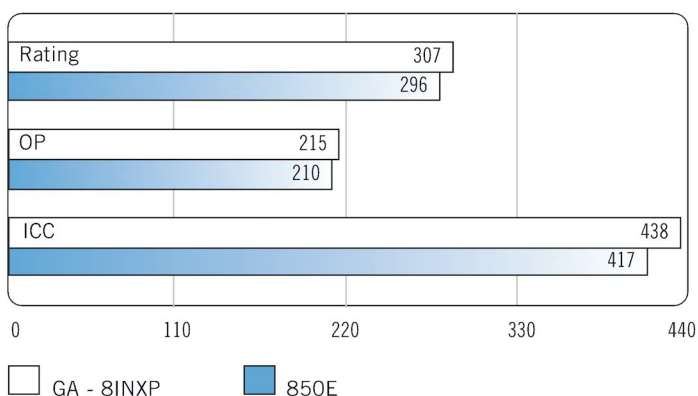
Gigabyte has taken the e7205 chipset and used it to build the GA-8INXP, one of the most forward-looking motherboards we have seen. Sure, the legacy ports are still there, but the GA-8INXP combines AGP 3.0; dual-channel DDR; Hyper-Threading support; USB 2.0; Serial ATA RAID; Gigabit Ethernet and five-channel audio all on the one board. It also uses a new dual-power system, which comes in the form of a small riser that sits next to the CPU. This riser is packed with power circuitry and topped with a pretty glowing blue cooler to negate the heat built up by so many MOSFETs. The point of the dual-power system is to provide a cleaner power supply and a backup in case the main power regulation circuitry falls over.

With such an amazing assortment of extras we were keen to see how the board performed. So we strapped in a 3.06GHz Hyper-Threaded Pentium 4, 1GB of PC2100 DDR and fired up our

Quake 3: Arena – CPU settings



SYSmark2002



benchmarks. The results were then compared to a system running the same CPU with 1GB of PC1066 RDRAM, using an Intel 850E reference motherboard. Until this point we had thrown a lot of DDR chipsets up against the i850E and came away feeling unsatisfied when yet again DDR fell short. With the GA-8INXP we finally achieved that long sort after warm fuzzy feeling as RDRAM fell behind in every single one of our extensive tests.

In SYSmark2002, the GA-8INXP pipped the i850E by just over ten points in the overall rating. This was thanks mainly to the bandwidth-hungry Internet Content Creation test, where the GA-8INXP's score of 438 was the highest we have seen to date. Similarly in Quake 3: Arena the i850E fell behind again, as the GA-8INXP romped in with a score of 333 frames per second.

RDRAM is dead. Here we have a motherboard that takes the now uncool PC2100 DDR and tricks it up to seize the performance king crown. It may not be designed as a desktop chipset, but for those who are happy to spend a little extra the e7205 provides a phenomenal level of performance.

Gigabyte has taken this performance and wrapped it in one of the most amazing feature sets we have yet seen, building on the already extensive extras offered as part of the chipset to deliver one of the best goddamn motherboards we have tested in the Atomic Labs. If you want a 'maximum power computing' motherboard, then go no further than the Gigabyte GA-8INXP motherboard. □

SPECIFICATIONS

Intel e7205 chipset; dual-channel PC2100 DDR-RAM; AGP 8x; USB 2.0; SATA; IDE RAID; Gigabit Ethernet.

WEBSITE: Gigabyte www.gigabyte.com.tw

SUPPLIER: Synnex www.synnex.com.au

PHONE: Synnex 1300 880 038 PRICE: TBA

9.5/10



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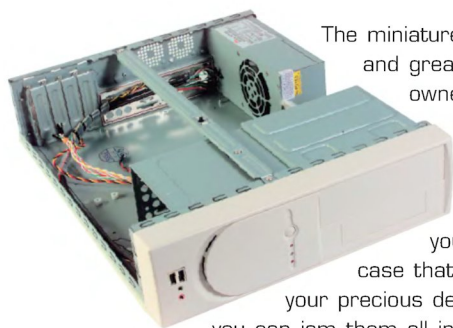
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Auriga CAS2002P4



The miniature PC case is the latest and greatest craze for PC owners who want something a little different to the stock standard beige tower. After all, why house your components in a case that swallows up half of your precious desk real estate, when you can jam them all into something only

marginally larger than a shoebox?

The Auriga CAS2002P4 is one such Micro-ATX case, measuring approximately 34cm wide by 9.5cm high, with a depth of 42cm.

Due to its small size you can't squeeze a full-sized ATX motherboard into this case without some hardcore motherboard hacksawing, and thanks to the low height, you're also limited to using half-height PCI and AGP cards – so this case obviously isn't going to be the basis for a high-end gaming brute. However, it could make for a very tidy media box in the lounge room, housing a motherboard with integrated graphics and sound such as an nForce2-based, Micro-ATX board, especially if it were given a coat of black or silver paint.

The case is very sturdily constructed, with a reinforcement strut across the top, allowing you to stand other gear on top. All

edges are rounded, and there are a total of three 3.5in drive bays and one 5.25in bay.

A 200W P4-compatible power supply should provide more than enough juice for the limited number of components you'll be able to fit inside.

To help keep the airflow acceptable, which is crucial in a small case, an 80mm fan is mounted at the front, with mounting spots for two 40mm fans at the rear if your components start spontaneously combusting.

Like most cases these days, a couple of USB ports and a headphone and microphone jack adorn the front. Thankfully the connections on these should fit most motherboards, unlike many we've seen in the past.

At only \$109, plus the cost of a decent motherboard with integrated graphics and sound, Auriga's CAS2002P4 could be the basis for a great media box at a fraction of the cost of a barebones Micro-PC. However, the limitation of using half-height cards, and the fact that it's only available in boring beige, means that this case isn't for everyone.

SPECIFICATIONS

One 5.25in and three 3.5in drive bays; Micro ATX; 200W P4-compatible PSU.

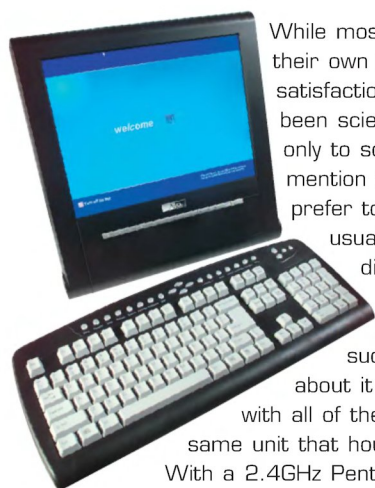
WEBSITE: Auriga www.go4auriga.com

SUPPLIER: AKA Technology www.akatech.com.au

PHONE: AKA Technology (02) 9896 5688 PRICE: \$109

7.5/10

Protac AIO



While most Atomicians prefer to build their own PCs due to the immense satisfaction that this involves (and has been scientifically proven to be second only to scoring a threesome), not to mention the saving in cash, some still prefer to buy a machine off the shelf,

usually for a relative who has just discovered the amazing new invention known as 'the Internet'. The AIO is one such system, but the cool thing about it is that it's an All-In-One beast, with all of the components built into the same unit that houses its 15in TFT LCD screen.

With a 2.4GHz Pentium 4 at the heart of this futuristic device, it's certainly not lacking in CPU processing power. Thanks to this speedy CPU, as well as 256MB of DDR-RAM housed on a SiS650GL + 962 motherboard chipset, this unit performed respectably in SYSmark2002, with an overall score of 193. Pity then about the totally woeful graphics chipset, which is the integrated SiS315 chipset. It's no wonder that this machine only scored a pitiful 1,443 in 3DMark2001 SE.

If this was a typical PC, you could just whack in a better video card and play away, but due to its totally integrated nature, lack of an AGP slot, and the fact that opening the case is next to impossible, this is not a machine that you'll ever be using as a

gaming beast. Pairing up such a powerful CPU with this sloth of a graphics chipset is kind of like hooking up Angelina Jolie with John Howard – it just doesn't make sense, should never happen, and leaves you feeling unclean in a 'time to scrub my flesh with bleach' way.

Other than the disparity between the CPU and graphics chipset, the rest of the features on the machine are very nice. A combo DVD-ROM/CD-RW drive is tucked away at the right hand side of the monitor, while four USB 2.0 ports, an onboard Ethernet port and an FireWire port provide more than enough connectivity. There's even an integrated 56K modem for those of you without broadband access. And for a PC, this thing is incredibly quiet, with zero noise from the HDD and only the barest of whispers from the HSF.

If it weren't for the piss poor graphics chipset, this could have been a very nice and simple-to-use system, all tucked away in a cool package. Unfortunately, for those of us who like to do a little more than merely write letters in Word or surf for fresh prOn on the 'Net, the graphics chipset used proves to be a killer Achilles Heel.

SPECIFICATIONS

2.4GHz P4; 256MB DDR-RAM; SiS315 video chipset; SiS650GL + 962 motherboard chipset.

WEBSITE: Protac www.protac.com.au

SUPPLIER: Protac www.protac.com.au

PHONE: Protac (02) 8748 8888 PRICE: \$2,747

6.5/10

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Sydney: Level 10, 301 George St, Wynyard
Melbourne: Level 3, 11 Dorcas St, South Melb.

Logitech MX series mice



When it comes to performance mice the name Logitech is always one of two manufacturers that come to mind.

Logitech has been pumping out great quality rodents for years now, and just in time for Christmas stocking filling it launched a whole new optical range on an unsuspecting public.

Dubbed the MX series, these new mice combine next generation optical sensors with a new ergonomic design and, in the case of the MX700, the best darn wireless connection we have ever seen.

The new Logitech look is sleek black and silver, with the left and right buttons hidden underneath a new seamless shell design. Also onboard are new buttons for faster scrolling, a taskbar button and ones for forward and back – all pretty much standard fare for high-end performance mouse models.

We have looked at two models of MX mice, the corded MX500 and the cordless MX700, which both share the same basic design. One great touch with the MX700 is the integration of a recharger into the receiver. When you are done mousing, simply sit the MX700 in its cradle to recharge until you next need it.

Both models perform well in desktop tasks, but we have seen in the past that the true test of mousing accuracy and feel is gaming. In-game performance with both models is superb, and the cordless MX700 performs just like a corded model, which is a rarity with cordless mice, however the batteries do add extra weight to the unit, which takes a bit of getting used to.

The optical sensor is smooth and accurate and this translates into performance that is as every bit as good as Logitech's previous generation Dual Optical model.

At the moment there are problems with the scroll wheel in some games, but Logitech has acknowledged this and is working on a new version of mouseware that should be out by the time you read this.

It is rare to come across a mouse with the feel, looks and performance of the MX500 and MX700. Logitech has been hugely successful at reinventing the optical mouse, ensuring that gamers can finally go cordless without sacrificing precision.

SPECIFICATIONS

MX optical engine; and fast RF cordless technology.

Website: Logitech www.logitech.com

Supplier: Logitech www.logitech.com

Phone: Logitech (02) 9972 3711

Price: MX500 \$129; MX700 \$199

9/10

Logitech Freedom 2.4



The days of the underside of your computer desk looking like a nest of pythons are finally coming to an end. Thanks to the wonders of RF connectivity we now have wireless keyboards and mice, wireless monitors and even wireless speakers to help banish the cabling nightmare forever. Logitech has been

doing its part in this quest to make the IT world a tidier place with the Freedom 2.4 dragging the humble joystick into this era of invisible cables.

Using a 2.4GHz radio transmitter, this device will work within 20 feet of your PC – not that you'll be able to see anything on your monitor from this massive range. We usually aren't too fond of using RF input devices for gaming, as the relatively slow update range between the mouse and the transmitter causes a lagging sensation, especially within first person shooters. However, flight sims are a different kettle of fish; due to the much slower rate of movement within these games, so an uber high update rate isn't necessary. When we fired up the benchmark of flight sims, IL-2, we weren't surprised to see that there was no perceptible difference between this joystick and our trusty Microsoft SideWinder.

As well as the standard joystick functions, with ten buttons and a shift key to assign each button a second function, the

Freedom 2.4 also incorporates a small metal throttle lever matched by rudder functionality via the twisting of the main stick. This rudder functionality is either a good or a bad thing, depending on your preference in joysticks. The main trigger on the front of the joystick is constructed from metal, and button layout is for the most part easy to reach. Unfortunately the ever-important number two button is a little awkwardly placed, but due to the fact that this isn't used too much it shouldn't be a problem. Three AA batteries provide 50 hours of continuous use, so this thing won't cost you an arm and a kidney to run.

The software included with the Freedom 2.4 is a total cinch to use: during installation it automatically searches for games installed on your PC and you can then assign each button a command specific to each of these games, all from the Windows setup application. For example, the software allowed us to assign buttons to actions specific to IL-2, such as moving the pilot's seat to the gunnery position.

With the convenience of its lack of cabling, wide range of functionality, ease of setup and affordable price, the Freedom 2.4 is our new favourite joystick in the medium price range.

SPECIFICATIONS

Ten buttons + shift key, rudder and throttle; and 2.4GHz RF with 20 feet range.

Website: Logitech www.logitech.com

Supplier: Logitech www.logitech.com

Phone: Logitech (02) 9972 3711 **Price:** \$169.95

9/10

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Sigma RealMagic XCard



If you have an older PC, a desire to watch your DVD and DivX movies on your TV, or just a strange fetish for filling your PCI slots, then you just might want the Sigma RealMagic XCard. You know when your sub-GHz CPU has eaten more deinterlaced lines than it can chew when Keanu's thick'n'fast *Matrix* fisticuffs go into Bullet Time more often than they should.

The XCard is a hardware MPEG-1, MPEG-2 and MPEG-4 decoder with a cornucopia of outputs to your TV and home theatre sound system. Composite, S-Video, component and even HDTV resolutions are supported at the video end, and coaxial audio output for Dolby Digital, DTS and stereo in the sound department, as well as S/PDIF inputs and outputs.

During testing this card helped to remove the system strain

of software decoding, with the CPU load falling from 72% to a much lighter 24% whilst playing DivX files. Display and sound quality was completely indistinguishable from normal playback with a DVD player; even plain old composite output looked superb. None of the noise or artefacts that usually wash over images because of cruddy RCA connections were apparent. Unfortunately the XCard is let down by an antiquated VGA solution; a pass-through cable from the XCard to your video card, which is not the best way to things.

The supplied player software is plain and unintuitive, but it did eventually yield some nice features, including a decent set of contrast, brightness and saturation controls. Thankfully, most functions are available via the remote, which is big, tough and doesn't look out of place on your coffee table, although the IR cable is only one metre long so you might have to perform couch yoga every time you want to skip a chapter.

Crisp, smooth video and full well-balanced digital sound makes the XCard a great accessory for anyone with oodles of movies. At present, however, the XCard doesn't support DivX 5 – this is only a minor blemish on an otherwise excellent MPEG decoder card. O

SPECIFICATIONS

S-Video and component video-out; coaxial digital surround and stereo sound; NTSC/PAL; HDTV resolutions.

Website: Sigma Designs www.sigmadesigns.com

Supplier: Pineapplehead www.pineapplehead.com.au

Phone: Pineapplehead (03) 9852 7444 **Price:** \$379

7 /10

Microsoft Wireless Optical Desktop for Bluetooth



It's either a stroke of genius or a natural evolution that a myriad of 2.4GHz RF wireless solutions have migrated to the Bluetooth standard, but it has taken years.

We first saw Bluetooth being used for mouse connectivity with a highly expensive presentation mouse from Logitech, but it is the Wireless Optical Desktop for Bluetooth from Microsoft that makes Bluetooth available for standard wireless keyboards and mice.

Microsoft's package marries a sleek Bluetooth dongle (with a very cute blue LED effect) with a keyboard and mouse. The dongle comes with a cradle for easy accessibility and a normal USB plug adaptor that lets you take Bluetooth on the road. They all come in a dark blue colour, with a particularly nice touch being the slightly translucent blue keys on the keyboard (just begging for some creative EL Cable modding).

One of the most impressive things about the package is the ease at which the software installs. After wrestling with arcane

software that has accompanied Bluetooth dongles in the past, Microsoft's plug and play setup is a dream.

One thing to note though, the kit requires Windows XP with the packaged Service Pack 1 and Bluetooth stack installed in order to work correctly.

Performance wise, there is little difference to previous wireless offerings from Microsoft, apart from increased range. The mouse is still way too jerky for most games, with often-noticeable pauses between updates.

To get the full benefit from this kit it pays to have other Bluetooth enabled devices.

Compared to the price of a normal wireless keyboard and mouse of this caliber, it is expensive, but on the other hand the additional Bluetooth dongle makes the price more bearable – the wireless ability may prove to be useful further down the technology track.

With little performance benefit over normal 2.4GHz RF setups, this one is only worth the plunge if you need the functionality of Bluetooth, and are happy to pay the wallet-devouring price. O

SPECIFICATIONS

USB Bluetooth dongle; keyboard with detachable palm rest; optical mouse; and ten metre range.

Website: Microsoft www.microsoft.com/hardware

Supplier: Microsoft www.microsoft.com

Phone: Microsoft 13 20 58 **Price:** \$399

6.5 /10

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OzForces Internet is a locally owned company started by a group of gaming enthusiasts who know the games and the culture surrounding them. To check out the plans and their instant online signups visit their website at www.ozforces.com or call them on the nationwide number 1300 134 081.

Gaming Our servers have the most popular online games installed and are under 24/7 surveillance by our administrators. Since our official launch on 17th July 2002, OzForces "force" to be reckoned



AG Neovo S-19



Even the most die-hard CRT freak has to acknowledge that LCDs are starting to look really damn sexy. Bigger screens, dropping prices, and a flair for design characterize a large part of the LCD market at the moment, and AG Neovo has carved out a distinct niche with its glass-fronted range of screens.

The S-19 from AG Neovo is the big brother of the range, coming in with a 19in screen that is packed with features to make for what initially seems to be a very tasty monitor. The screen itself is big and imposing, with a glass front plate to keep the LCD screen safe from probing fingers.

Turn it around and you will find multiple input options on the back. These include the common choices of a 15-pin D-Sub input for normal VGA and a DVI-D port for digital connection to your video card.

But the S-19 also supports both S-Video and RCA inputs so you can hook up a variety of things like DVD players, VCRs or AG

Neovo's own optional Television Tuner frame, a cute little device that hides the TV tuner circuitry behind a normal sized picture frame, allowing you to fondly remember Auntie Flo's 80th birthday while checking SBS for late night French flicks.

As for the actual screen, with its native resolution of 1,280x1,024, it is pretty good for everything. Except gaming. The S-19 has an advertised pixel response time of 15ms/10ms, which translates to an overall response time of 25ms.

However even with this relatively low number, extensive testing of the S-19 in games highlighted the fact that the blurring was unacceptable for anyone with a serious interest in gaming with an LCD screen.

Other than this, the screen is crisp, bright and very visible. It has a viewing angle of 170 degrees both horizontally and vertically, and the protective glass plate used over the LCD enhances this.

The AG Neovo S-19 looks good and works well for most uses, but after having seen other screens that have a hardly noticeable pixel response time, we'd be hard pressed to go back to gaming in a blur.

SPECIFICATIONS

19in screen; 1280x1024 native resolution; 15ms/10ms pixel response time; 15-pin D-Sub; S-Video; RCA, DVI-D.

WEBSITE: AG Neovo www.neovo.com

SUPPLIER: Camcom www.camcom-international.com

PHONE: Camcom (02) 9418 8888 **PRICE:** \$4,598

7.5/10

Swann wireless Pencam



Every once in a while we get a product to check out that doesn't really fit in with our usual review gear, but is just so cool that we have to tell you about it.

You've probably already guessed from the name what this month's mystery item is – a camera and microphone hidden within what appears to be a normal ballpoint pen. If you didn't figure that out, then it's time to start stocking up on the old smart pills, Einstein.

Using the wonders of RF transmission (with four different channels available, ranging between 2400 and 2483.5MHz), you can use this pen at a range of up to 100 metres away from your recording device. That is, provided there are no walls, sources of EMF radiation or nuclear reactors between the pen and the receiver. During testing, we found that its range was drastically reduced when there were a couple of walls in between the pen and the receiver unit, and it started dropping out at around 15 metres.

Setting it up was a breeze. Unfortunately the receiver base station only has RCA outputs for sound and video, so you'll need

to use a video capture card with RCA video input to capture the pen's video and audio on your PC. We installed a VIVO GeForce4, plugged in the receiver, put the batteries in the pen, and were up and running.

For such a tiny CMOS camera, the picture quality is astonishing: running in full colour at a resolution of 300,000 pixels, the camera exhibited very little of the 'fish-eye' effect that smaller cameras tend to suffer from, and kept everything in very clear focus, even at very close range.

The pen has two power options, depending on how you're going to use it: if you just want to leave it in your pocket, a separate, wired, 9V battery pack should keep you going for a few hours; however, if you're going to be using it out of your pocket, you'll need to use five of the 1.5V batteries commonly used within watches, but this will only last for around 30 minutes of continuous use.

If you work in the security industry, have a spare \$1,100 that you feel like blowing on a useless but impressive toy, or feel like taking part in illegal subversive activities, then you're bound to have some fun with this little gadget.

SPECIFICATIONS

RF wireless transmitter in pen; nib serves as aerial; full colour 300,000 pixel camera.

WEBSITE: Swann www.swann.com.au

SUPPLIER: Swann www.swann.com.au

PHONE: Swann (03) 9421 2600 **PRICE:** \$1,099

8/10

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Lost in Space LCD Indicator



Warning! Warning! High temperatures approaching! Not with this thing, Mr. Robot with wobbly arms. A modded case simply isn't complete without a fancy doobilacky LCD display on the front, and the L.I.S. is without doubt the fanciest schmansiest LCD display currently available for your PC. Yep, even better than the DigiDoc – and that's a pretty big call.

You'll need a motherboard chipset that is compatible with Motherboard Monitor 5 for this gizmo to work, which means nearly every chipset you can think of. Once you've hooked the L.I.S. up to a single USB and serial port via its pass through cable, it's a simple matter of installing the included software, configuring it to the right serial port, and away she goes. The setup software has to be some of the simplest software we've seen for a device of this type, which is no small feat considering just how much you can do with the L.I.S.

The list of information that this device can display is staggering. CPU load, memory load, swap file load, CPU frequency, CPU temperatures, CPU voltage and fan speed. It will even display a raft of information regarding your OS and machine

settings, such as IP address, free HDD space, DirectX version and too many other bits of info to list. Sure, you'll probably never need to use 90% of this information, but it's still cool to be able to access it, if you feel the need. If you'd like to look at all of these different bits of information, you can set the L.I.S. to conveniently rotate between each display setting for an amount of time set to your choosing. Heck, it'll even tell you when you have new email. For the Winamp lovers out there, the L.I.S. can also display the graphic equaliser from this application. Now, if only it could show tomorrow's winning lotto numbers. . .

Not only does this display unit show a hell of a lot more info than any other display we've seen, it's also the finest looking display by a long shot. The LCD screen is available in several different colours, each of which is bright to the point of retina burning. The only thing that could dissuade you from purchasing this display is its asking price of \$155. Not cheap, but certainly cheaper than the manservant you are currently employing to monitor your PC, and the L.I.S. doesn't leave smelly presents for you in the corner of your closet.

SPECIFICATIONS

Motherboard Monitor 5-compatible motherboard necessary; one USB and one serial port necessary.

WEBSITE: VL System www.vlsys.co.kr

SUPPLIER: PC Case Gear www.pccasegear.com.au

PHONE: PC Case Gear (03) 9568 0932 **PRICE:** \$155

9/10

Sony DRU500A



DVD burners haven't matured as rapidly as our humble CD burners thanks to a multitude of competing and conveniently incompatible formats, not to mention the extraordinary cost of the drives and their accompanying media. However, two standards are starting to emerge as clear leaders, DVD-R/RW and DVD+R/RW, and the prices for both technologies have plummeted over the last 12 months. The new DRU500A allows you to burn DVDs using either of these formats, as well as standard CD-R/RW burning, and it won't cost you the farm to purchase.

DVD-R/RW is probably the most prolific DVD writing format currently in use, and has the benefit of being officially supported by the DVD Forum. However the newer DVD+R/RW format, while not supported by the DVD Forum, offers significant advantages over DVD-R/RW, most notable being on-disk editing of video. This is due to the fact that the table of contents on a DVD+R/RW disk can be changed before the disk is finalized. Also, formatting of disks on the DVD+R/RW is substantially

quicker than DVD-R/RW, with an average format time of around one minute, compared to two hours with DVD-R/RW.

Considering that this drive is capable of six different types of burning (DVD-R/RW, DVD+R/RW and CD-R/RW), testing its different burning speeds simply wasn't feasible for this half-page review. However, judging by the quality of other DVD burners, we're confident that this drive will perform as advertised, with a maximum DVD burn speed of 4X, a maximum CD burn speed of 24X, and a maximum CD-RW burn speed of 10X. Read times are also respectable, with a maximum DVD read speed of 8X while CD-ROMs are read at a maximum of 32X.

Not only does this drive have a wad of different burn modes, it also ships with a comprehensive suite of software, including VERITAS RecordNow, VERITAS SimpleBackup, Sonic MyDVD, ArcSoft ShowBiz, CyberLink PowerDVD and MusicMatch Jukebox.

The Sony DRU500A is a DVD burner that has the best of both worlds, allowing users to use the DVD-R/RW format as well as the newer, more feature rich DVD+R/RW format. Combine this with the extensive software pack and a reasonable asking price of \$899, and we can't help but love what this drive has to offer.

SPECIFICATIONS

CD-R/RW; DVD+R/RW; DVD-R/RW; 8MB buffer; Power-Burn buffer underrun protection.

WEBSITE: Sony www.sony.com.au

SUPPLIER: Sony www.sony.com.au

PHONE: Sony 1300 13 7669 **PRICE:** \$899

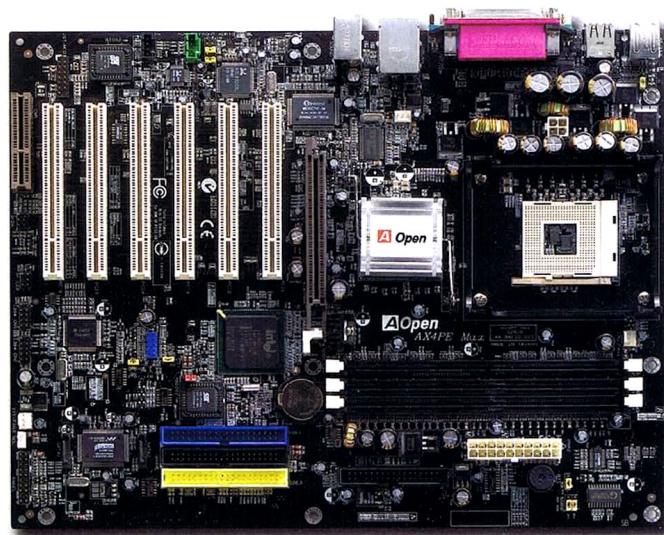
9/10



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<http://www.anandtech.com>



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	Parallel ATA	Serial ATA
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Volts	5V	250mV
Pins	40 pin	7 pin
Length Limitation	45.72公分	100公分
Ventilation	No	Yes
Peer-to-Peer	No	Yes



EzRestore Instant Restoration System

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GAMES

The sound of gaming

We all love great graphics and gameplay, but a game's music rarely gets tongues wagging. Bennett Ring is one of the few who appreciates game soundtracks.



When it comes to writing a review of a game, one of the most commonly neglected features is the soundtrack. It's quite surprising really, as a game's soundtrack is played the entire time you're in the game, and can have a huge impact on the overall ambience of a title.

When done properly, the music is usually a much more subtle component to the game than the obvious elements such as graphics and gameplay, and it's for this reason that it's usually the last thing we think about when writing a review.

Usually by this stage we've already written too much text, so we wedge in a line or two about the game's soundtrack. But when you think about it, music is more deserving of a mention due to its increasing importance and complexity.

Back in the days of the Commodore 64 and the primitive SID music chipset, we were more than happy to hear a few bleeps and blings that vaguely sounded like they were maintaining a semblance of a rhythm.

Actually, after downloading the SID file player DeliPlayer (www.deliplayer.com) and firing up a few of the old classics, such as the soundtracks from International Karate, Paperboy and The Last Ninja, these music tracks aren't half bad – the kiddies would probably go right off to them at a rave.

They're certainly leaps and bounds ahead of what the PC was capable of producing at the time, which usually had to rely upon a tinny little PC speaker to supply the tunes.

Fast forward to today and thanks to a variety of different technologies we now have games that feature music we'd be happy to listen to when we're not even playing the game. The number of times I've left my Xbox cranking out music while I'm

doing something else is countless. It's gotten to the point where I'm now trying to figure out how to rip the tracks from within games – I own the game so that should mean it's legal to listen to the music when and where I choose, shouldn't it?

Unfortunately this hasn't been a simple process, thanks to the use of proprietary compression formats.

Two of the primary technologies that allow us to skate along to AC-DC's *TNT* in Tony Hawk Pro Skater 4, or steal a tank to the classic *Sunglasses At Night* in GTA: Vice City, are DVD drives and music compression. Thanks to the massive amount of data that can be stored on DVDs, game developers can now squeeze unheard of amounts of music into a game. GTA: Vice City is a prime example, with more than 80 hits from the 1980s. But even with this large amount of storage space, it wouldn't be possible to store this many songs as .wav files, which is where music compression comes into the picture.

Games use cutting edge technology, and it's no different when it comes to music compression. MP3 compression has been used in games for years, and now we're even starting to see the use of the .OGG format to obtain even higher quality music, with UT2003 being the most recent example.

The end result of these two technologies means that – for consoles at least – the use of real world music within games is becoming much more commonplace.

Unfortunately the PC is lagging behind in this area, thanks to the lack of DVD drives installed in users' systems. But that doesn't mean PC games don't have kickarse music as well – they just have less of it. The use of real world tracks in PC games

isn't anywhere near as commonplace as consoles, but there are plenty of real world musicians involved in creating music for the PC.

Most gamers would know of Trent Reznor's involvement with the Quake series of games, and the recent highly atmospheric soundtrack to Hitman 2 was performed by the Budapest Symphony Orchestra.

Another recent advancement in game music are dynamic music tracks that change to reflect what's happening on screen.

This form of music has been around for many years, but it's only recently that the technique has begun to work seamlessly. In fact, there are still many games being released today that try to incorporate dynamic music tracks but fail miserably.

A game that has pulled it off perfectly is Splinter Cell, which uses three main dynamic tracks throughout the game.

There's the standard, mellow track that plays when you haven't been discovered by your enemy.

When a guard gets suspicious, the music speeds up a little and feels more ominous, and finally when all hell breaks loose so does the music.

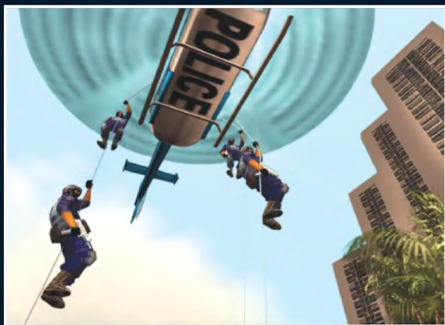
The transition between these different tracks is perfect, and is a major aid in figuring out how to play the game.

Unlike graphics, there really isn't much room for improvement when it comes to game music. About the only advancement that springs to mind is the introduction of DVD-Audio, but even this isn't a quantum leap over what we have already.

So next time you're playing a game, spare a moment to appreciate the tunes that are setting the mood, and for once the creators of this music might get the credit they so rightly deserve. □

Grand Theft Auto: Vice City

Wear a Hawaiian shirt and wield a golf club, just like John Gillyooly.



ABOVE: The cops are tenacious as always



ABOVE: Motorbikes add a lot to the gameplay



ABOVE: Even the skies are not safe from Tommy

Racing out of your neon-adorned beachside hotel, you leap onto a conveniently parked motorbike and lay down some rubber – to the sounds of Flock of Seagulls. Such is life in Vice City, the Miami-esque tropical paradise you are plunged into for the latest instalment of the Grand Theft Auto series of games.

Set in 1986, well before GTA 3, Vice City is a prequel of sorts. You play Tommy Vercetti, Liberty City mob guy, who is sent to Vice City as a reward for keeping quiet about his bosses during a 15-year jail stretch. Your task is to kick off the Mob's cocaine dealing activities on the streets of Vice City. Of course, things don't go to plan and you are left to build an empire while discovering who ripped off your cocaine.

Cue lots of running, driving and shooting. Gameplay is similar to Grand Theft Auto 3, however developer Rockstar North has gone back to the drawing board to expand and refine the GTA experience. Car physics have been tweaked up and location damage has been added to vehicle tires, making for some great high-speed shenanigans when a spike strip or police bullet shreds your wheels.

Besides the cars seen in GTA 3, Vice City introduces a much-expanded range of boats, as well as motorbikes, seaplanes and helicopters for you to 'borrow'. Alongside these are new missions designed to exploit the vehicles to the full, and these missions also received a lot of focus in development. Gone are the relatively simple missions of GTA 3 and in their place is a more diverse,

deep range of tasks for you to indulge in. Missions have you doing everything from chasing down cars to taking the sticks of a remote control helicopter as you plant charges within an office block.

These elements fit into a storyline that is pure Hollywood cheese. The overall scope of Vice City is greater than that of GTA 3. You start out with few allies and as you build up contacts within the crime world of Vice City you can expand your influence by buying property around the city. Each property generates money for you, as well as providing new missions for you to face, and this facet opens up the game a huge amount.

There is a very cinematic vibe to Vice City that stems from numerous sources. The obvious referencing of classic gangster flicks includes the very Tony Montana-like Cuban crime lord Diaz, whose house is reminiscent of the Scar-faced one's abode, and sidekick lawyer Rosenberg conjures up more than a few similarities with Sean Penn in *Carlito's Way*, while the city itself is pure *Miami Vice*, from the cars to the clothes to the voiceovers.

Coincidentally, Phillip Michael Thomas from Miami Vice is only one of an amazing cast of voice actors, playing occasional ally Lance Vance. Tommy Vercetti is voiced by Ray Liotta, and over the course of the game expect to chat with Burt Reynolds, Lee Majors, Dennis Hopper and prOn queen Jenna Jameson, all in various guises. Tightly linked in with this is the amazing licensed soundtrack. The radio stations in GTA3 were

full of funny commercials and bad, generic music tracks. This has now changed and Vice City's radio is full of funny commercials and bad, genuine eighties music. All the champions of the 80s are there, from INXS to Slayer; bands that made the eighties the horrible stadium-rocking memory that it is.

The radio is again a work of art, one of the little peripheral touches that make the game so special.

However, the overall impact of Vice City is different to that of GTA3. Where the previous title was so amazingly new and different that it became an instant hit, the satisfaction in Vice City lies deeper under the surface. By now we have all experienced the third-person 3D city crime game genre, so there is little new on that front, but what we seldom experience is such a deep, involving and polished product.

Vice City is an amazingly rewarding game. Even the removal of hookers to appease the censors in the Australian version cannot dampen the experience. Each mission is new and exciting, each moment full of new experiences. Rockstar North has now proven to an eager gaming world that it is not just a one-trick pony. Vice City is perhaps the best game to yet grace the PS2. □

9.5/10



GAME DETAILS

□ **FOR:** Hawaiian shirts; neon signs; strip clubs; and all the other seediness of 1980s Miami – all packed into one of the best games out there on any platform.

□ **AGAINST:** Occasional minor bugs in the code interrupt gameplay – not enough to cause you to lose your head, but they're still there.

DEVELOPER: Rockstar North www.rockstarnorth.com

PUBLISHER: Rockstar Games www.rockstargames.com

DISTRIBUTOR: Take2 Interactive www.take2games.com

PHONE: Take2 Interactive (02) 9482 3455

Tom Clancy's Splinter Cell

Bond is lame. Sam Fisher now owns your Spy world, according to Bennett Ring.



ABOVE: Using an enemy as a human shield.



ABOVE: Nobody climbs a pole like Sam Fisher.



ABOVE: The camera zooms in when shooting.

Xbox owners of the world rejoice, for Splinter Cell has finally arrived. We're pleased to report that this game not only looks as hot as a naked Buffy, it's also as much fun to play with. Well, almost. While the game isn't without a couple of issues, Splinter Cell looks destined to be one of the biggest Xbox titles of 2002. Here's why:

If you haven't seen screenshots or the demo of Splinter Cell in action, you probably don't realise how gorgeous it game is. Using a highly modified version of the new Unreal Warfare engine, the biggest drawcard of the graphics engine has to be the lighting effects. Every model in the game casts accurate, moving shadows on the environment and other objects, right down to the main character's ears casting shadows onto his own head, just like the upcoming Doom III. Light sources cast 'beams' of light, an effect used heavily throughout the game. Most of these lights can be shot out, leaving you with precious shadows to cower in, but more on that later.

Character modelling is quite detailed, although not to the same level of the models seen within MGS2, while the environments are some of the most realistic ever seen on a console thanks to the use of high resolution textures and more polygons than you'll find in one of *Shrek's* mutant children.

Sam has to be one of the most flexible characters ever seen in a third person game. Shimmying, wall jumping, pipe climbing, rolling and even a mid air splits manoeuvre are just a few of the moves that help to make

Sam look as if he should be chased by a chicken in a Nike advertisement. Considering these rich graphics, the solid frame rate is an extraordinary accomplishment.

Now that we've reinforced how spooge-worthy the visuals are, let's talk about that important element known as gameplay. We all know that playing a game with flashy looks but no depth is like shagging a model – fun at first, but soon it gets really boring. Never fear: while Splinter Cell has the looks of a super model, it also has the personality of the most interesting person you know.

You play the role of Sam Fisher, a solo NSA operative sent into enemy areas to gather intelligence, take out bad guys and just generally do the stuff expected of a high risk spy. To aid you in this quest Sam is equipped with more gadgets than you'll find in M's workshop, including thermal goggles, fibre optic door cameras and chemical lock picks. If you're not sneakier than one of those farts we all silently squeeze out in a crowded room, Sam is going to be pushing up daisies faster than you can say 'Oh crap, I've been spotted'. This is where the lighting effects really come to the fore, proving that they offer more than purely visual effects. A light meter indicates how well the cover of darkness hides Sam, reinforcing how important it is to stick to the shadows to avoid detection. Thanks to some quality AI algorithms, the guards you work around behave pretty much the way you'd expect a real life target: reacting to sounds, events and the sight of

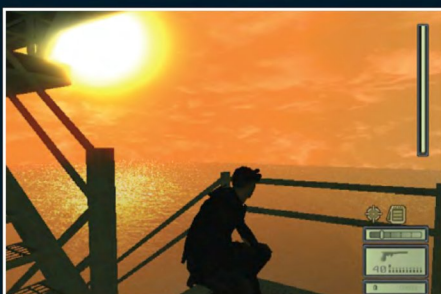
Sam. The only problem we had with the AI was its tendency to occasionally get stuck on bits of the environment, with a resulting moonwalk routine as they try to run through solid objects. However, this wasn't so commonplace that it became annoying.

What is annoying is the save game system. At certain points throughout each level you are prompted to save your progress, but these can be few and far between. It's a pity, given how simple it would have been to implement a more user friendly system – otherwise it might have scored higher.

Thanks to the need to keep retrying difficult sections, Splinter Cell isn't the kind of game you'll finish overnight. The average gamer will probably get through it in around 15-20 hours, and further levels are going to be freely available via Xbox Live (not that that means much to Live deprived Aussies) that will increase the playtime even further.

If you ever wanted to be a secret agent with cool guns and high tech equipment, but didn't want to undergo the obligatory drug testing/physical exertion/risk of getting your brains blown out, then you must check out Splinter Cell. Provided you don't get easily frustrated. . . but nobody said being an NSA operative was going to be a walk in the park.

9/10



GAME DETAILS

FOR: Look at those screenshots – this is one helluva purdy game. And it's not just a mindless blast fest; you're going to need to use your noggin to get through this one.

AGAINST: An unforgiving save game system can lead to very high frustration levels; and overall it's quite linear.

DEVELOPER: Ubi Soft www.ubi.com

PUBLISHER: Ubi Soft www.ubi.com

DISTRIBUTOR: Ubi Soft www.ubi.com

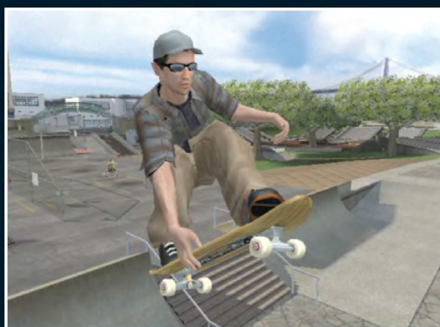
PHONE: Ubi Soft (02) 8303 1800

Tony Hawk Pro Skater 4

Got Japan Air? Grind the half-pipe with George Soropos.



ABOVE: The Airwalk – where's the water walk then?



ABOVE: Project Dis' Gravity was on its way



ABOVE: You want tricks? This game *has* tricks!

If you have yet to see a console game that tickles your fancy to the point that you seek it out to supplement the goodness of your much loved PC, then you're probably a sensible and astute gamer. Almost every really good game released for the Xbox and PS2 has also become, eventually, available for PC. Tony Hawk Pro Skater 4 is unique in this respect, as it will only be available to next generation console owners. If you listen hard, you can already hear the 'Mum, can I have a PS2 for Christmas?' cries for appeasement.

Tony Hawk 4 represents the biggest upgrade in the series so far, with more changes and additions than the last two versions combined. The first change any experienced player will notice is the much higher skill levels of the skaters available from the start of the game. Skaters still have to earn points to upgrade various skill areas, but the default levels of the skaters will allow you to pull off some decent moves early on in the game; moves that were impossible in the previous incarnations.

The controls respond instantly and consistently, giving you a feeling of being in total control. This is obviously in response to complaints about the sometimes sluggish and difficult combo controls in THPS 3 that made some moves very frustrating and others nearly impossible. The new silky smooth control mechanism helps to enhance the game's wide selection of new tricks. You can now easily do a more advanced version of any trick by double tapping the grab trick or the flip trick

buttons – hold down the grab button to do a Japan Air or double tap the grab button to pull off a One-Footed Japan Air. You can do this with every trick to nab some extra points.

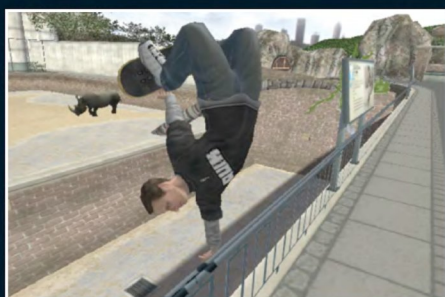
The most significant new trick has to be the 'spine' transfer. By pressing the left and right triggers simultaneously while jumping towards a wall, players can now transfer over the spine of the wall and make a smooth landing. What makes this move so good is that it can be used anywhere, not just over walls. Similar to the leveling-out ability in Shaun Palmer's Pro Snowboarder, your skater can now level out his or her board when they are out of control or badly positioned. This will be a godsend to all those players who have the nasty tendency to jump off the side of quarter-pipes, as this trick will let you pull off an emergency landing. However, these tricks are just novelties when compared to 'skitching' – the best of the new tricks. Basically, it lets you hitch a ride from a passing vehicle by grabbing onto it.

The design of Tony 4 is quite different to earlier games in that it takes a more freeform approach to gameplay. You no longer need to play through the entire game as each individual skater – whatever you do with one skater counts for all of them. The game is goal-orientated, with tasks given to you by people on the street, on rooftops and wherever else you can find them. There is no time limit on any of the levels until you decide to take up a challenge. At any time you can skate up to a person and press the B

button to talk to them and get a challenge. Players will be asked to outrun cops, knock down obnoxious people and tear down banners just to name a few. Once a challenge is started the clock starts counting down. If time runs out you can just press the Start button to try again, or you can skating on, in search of a simpler challenge. Also new are the skater-specific Pro Challenges, which inject a whole new element into the game. Although you'll need to work for them, the Pro Challenges are great for fans of particular skaters and total rubes alike as it offers background on the particular accomplishments each skater did to make his or her mark. You then get a few minutes to mimic their historic moment! So even though you don't have to complete challenges with every skater, ala THPS 3, Neversoft has cleverly given players a reason to use all the skaters anyway.

We haven't even mentioned the huge and wonderful maps yet. The skating arenas on Tony 4 are bigger, better and have much more variety of terrain than ever before. You'll spend hours as a tourist in each one, looking for spots to pull off some crazy tricks – kind of like GTA 3. Tony Hawk Pro Skater 4 is easily the best in the series, and not a bad reason at all to grab a next generation console. □

9.5/10



GAME DETAILS

□ **FOR:** New, more immersive gameworld; major new tricks and abilities for skaters; more of everything really!

□ **AGAINST:** Not much? Create a Skater mode same as in TH3; two songs on the soundtrack from skaters in the game are rather awful.

DEVELOPER: Neversoft www.neversoft.com

PUBLISHER: Activision www.activision.com.au

DISTRIBUTOR: Activision www.activision.com.au

PHONE: Activision (02) 9869 0955

Age Of Mythology

'What about the age of reason?' wails John Gillooly.



ABOVE: Myth units are kick-arse. Stay in favour.



ABOVE: 'Oh, yeah, wood, what is it good for. . .'



ABOVE: A game within a game: Spot the interface!

How does someone improve upon one of the finest RTS franchises in existence? Well, if you're Blizzard, you go for the lucrative market provided by the third-person, action-obsessed console gamer. If you're Ensemble studios however, you stay true to the fundamental concepts and mix things up for the die-hard realtime strategy fanatic – all while adding something new.

Instead of diverting its game development efforts towards something offbeat, Ensemble has kept its head and come up with Age Of Mythology. Although this title is reminiscent of its predecessor, the Age of Empires series, it seriously departs from the tried and true formula in many an intriguing way.

Age of Mythology marks the first move to a completely 3D world by Ensemble, a move that could be seen cynically as a belated jumping-on-the-3D-bandwagon affair – if it didn't work so well. As a small example of the way Ensemble has approached the 3D world for this game is the absence of the almost industry-wide 'map the scroll wheel to an ineffectual camera zoom' feature. Instead, the scroll whell is bound to the infinitely more useful function of camera rotation.

Age of Mythology takes you back to old times, where man lived under the polytheistic shadow of many almighty. You get given control of the Greek inhabitants of Atlantis, the Egyptians and the Norse. Each civilisation has its own particular relationship with the Gods, which translates into subtle gameplay differences as you take charge of each.

At its core, the game is laden with tried and true RTS fodder. You must mine gold, chop trees and gather food if you want your people to advance through the ages and develop a bigger and nastier arsenal of weapons and power.

However, Age of Mythology deftly sidesteps potential sameness through some well thought-out gameplay concepts. With the introduction of the mythological themes comes two major additions to the game, 'Favor' and 'Myth' units. Favor is the basic resource of religion, gained through worship of the gods, and is used for researching special technology upgrades and for building Myth units.

Myth units run the gamut from the all-powerful Hersir soldiers of the Norse, to more fanciful critters like Kraken and the Cyclops. You gain access to the units as your people advance through the ages, and you'll be given the choice of two gods to worship. Each god bestows blessings upon different types of units and makes one or more Myth units available for you to build. Gods also give you an incredibly powerful spell for you to use as you see fit, however the spells are all one shot wonders. Spells add an amazingly important tactical aspect, and are usually held in reserve until they are absolutely needed. Like all big weapons, spells are kept in check by bouts of extreme conservatism.

Gameplay covers the range of traditional RTS fare, with three major components. There is a campaign in which you follow the journeys of Arkantos, an Atlantean who finds

himself on a quest to prevent the end of the world. As you progress through the 30 or so missions, the campaign will put you in eventual control of all three races. Besides the campaign there is also a random map based-single player mode and the traditional multiplayer mode. Ensemble has done a great job with the campaign; with its strong storyline, varied and detailed missions and sheer gameplay it can't help *but* engage you.

Spells and Myth units add an extra dimension as well. You cannot afford to ignore the generation of Favor for long, and myth units end up being used very tactically, especially once you reach the Norse missions. The Norse generates favor by fighting, however the Myth units do not generate favor when in battle. This leads to the search for balance between powerful Myth units and less powerful Favor generating units and forces a concurrent shift in tactics when playing as the Norse.

Ensemble Studios has delivered a game that combines the strong heritage of the Age series with some fundamentally new gameplay concepts and a very pretty 3D engine. Age Of Mythology will not redefine the genre, but there are few RTSes that can touch the level of class and enjoyability of the game.

9/10



GAME DETAILS

FOR: Enjoyable campaign; nice mix of traditional Age gaming and the new Myth concepts.

AGAINST: Hardly revolutionizes the genre.

REQUIREMENTS: 450MHz CPU; 128MB RAM; 16MB video; 1.5GB HDD

RECOMMENDED: 800MHz CPU; 256MB RAM; 64MB video

SOUND APIS: DirectSound **VIDEO APIS:** Direct3D

DEVELOPER: Ensemble Studios www.ensemblestudios.com

PUBLISHER: Microsoft Games www.microsoft.com/games/mgs

DISTRIBUTOR: Microsoft Games www.microsoft.com/games/mgs

PHONE: Microsoft Games (02) 9870 2200

Hitman 2: Silent Assassin

Need your evil boss put to sleep for good? Bennett Ring is the man for the job.



ABOVE: One bad-arsed baldy. Fear him!



ABOVE: Character detail is very impressive. . .



ABOVE: . . .as are the large open environments

Admit it – there is a psychopathic part of your psyche that finds the idea of being a professional contract killer very attractive. Don't be afraid: we're all soulless murderers at heart – it's called the human survival instinct.

Hitman 2: Silent Assassin will bring this dark side of your personality to the surface. The original Hitman suffered from a chronic case of woeful AI, and as a result wasn't anywhere near as popular as the concept deserved. The developer of the game took these criticisms on board, and corrected them perfectly for the sequel, with the end result being that Hitman 2 is the game the original tried so hard to be.

Hitman 2 uses a revamped version of the original's graphics engine, and ends up being a very attractive game. It's not quite up there with the UT2003s of this world, but it's not far off.

You'll be amazed by the large open vistas within the game, and their populations of nicely detailed characters. The game is designed to be played from the third person perspective, but it is possible to zoom into the first person view. Unfortunately this view uses the same models as the third person view, which means that it looks crap. Stick to the third person view as the developer intended and you won't even notice this design flaw.

Thanks to a rag-doll physics engine, the people you decimate will behave realistically, flopping about all over the place instead of magically falling through walls and floors. Animation is superb, with a massive range of possible movements available to each NPC. For example, one of the guards I watched through

my digital binoculars strolled up a path, had a cough, took a piss and then pulled out a cigarette before lighting up. So I killed him. Given that you will spend so much time scoping out each area before making your move, this diversity in NPC actions will help to keep you captivated the entire time.

The lovely in-game graphics are interspersed by some of the most cinematographic cut-scenes we've ever seen in a game.

Each level revolves around a hit: you'll be tasked with killing one or more people and getting away with it before the mission ends. A very cool briefing at the start of each contract details why that person needs to die, and will give you tips on how to carry out the job.


You then need to pick the weapons for the job, and there are more guns to choose from in Hitman 2 than you'll find in an American High School. Some of the cooler weapons can only be accessed if you achieve certain missions in certain ways. Once you've picked your tools of the trade, it's time to kick some head.

Most of the time you'll start off the game by scoping out your environment before proceeding with whatever plan you think will work best. You see, each mission can be accomplished in three or four totally different ways, making this game very replayable, as well as immensely satisfying, in a way that reminded us of Deus Ex.

A large part of the Hitman experience is evading the patrolling guards that inhabit each environment. These guards exhibit AI that is for the most part brilliant, but it occasionally flips over to the 'total idiot' side. They're smart

enough to realise when the US M4A1 rifle you're carrying doesn't match the Russian uniform you stole from the last guy you capped, but will often run straight into your hail of bullets as if it were a stream of water on a hot Summer day. This is actually the biggest flaw of the game. If you go in with all guns blazing, clearing a level is quite simple, and you'll zip through the game in no time. However, you'll be punished when it comes to the final ranking given to you, which is based on how many people you killed. Killing only the mark rewards you with the uber rank of Silent Assassin, with more guns as a result, so you're encouraged to take the sneaky approach.


The sound effects are worthy of mention, acting as a valuable cue to tip you off to the position of approaching enemies. The Budapest Symphony Orchestra and Choir provide the sound track, which is as superb and epic as you'd expect coming from such esteemed musicians. If you really dig the music, it's even available on a separate CD.


Other than the slightly weird AI, Hitman 2 is a game that stinks of high production values in every area, from the in-game map to the pre-mission briefings. Just make sure that you try to take the stealthy approach – the game is infinitely more rewarding when played this way, and won't be finished in a matter of hours. 

9/10



GAME DETAILS

 **FOR:** A variety of different ways to accomplish each mission banishes the demon of linearity.

 **AGAINST:** AI doesn't pose much of a threat if you decide to take the Rambo challenge.

REQUIREMENTS: 450MHz CPU; 128MB memory; DirectX 8.1-compatible video card; 800MB HD space.

RECOMMENDED: 1GHz CPU; 256MB memory; GeForce2 or better; and EAX-compatible sound card.

SOUND APIS: EAX, EAX advanced HD, Direct Sound **VIDEO APIS:** Direct3D

DEVELOPER: IO Interactive www.ioi.dk

PUBLISHER: Eidos Interactive www.eidosinteractive.com

DISTRIBUTOR: GameNation www.gamenation.com.au

PHONE: GameNation 1800 060 605



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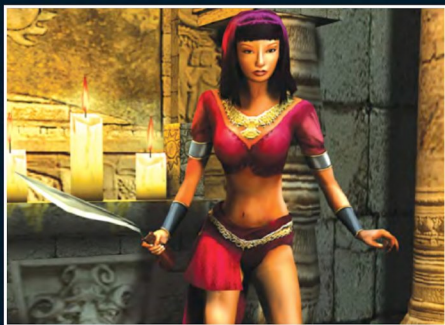
DAY 1 STUDIOS



xbox.com.au

Eternal Darkness: Sanity's Requiem

Take a stroll down insanity lane with Bennett Ring.



ABOVE: Player characters are varied and refreshing.



ABOVE: A magic spell in action. Very pretty.



ABOVE: 'Red. . . no, no green!' No prize for Braxus.

Let me begin this review by saying that of all the scary games I've ever played, none of them have come as close to inducing involuntarily sphincter dilation than *Eternal Darkness*. In fact, I'm pretty sure I felt a trouser pebble rolling around in my jocks last night after playing through an exceedingly terrifying scene. This is coming from someone who thought *The Exorcist* was a light hearted, farcical romp. Hang on a minute, isn't this a KiddieCube, I mean, GameCube game?

Yes it is, and it just happens to be one of the first games to show the true potential of the GameCube. Developer Silicon Knights has made excellent use of the tiny console's hardware to produce a surprising title.

My first thoughts were that it was yet another Resident Evil clone, thanks to its third person perspective, and the coffin loads of zombies and generally demon-like baddies. *Eternal Darkness* however is bigger, badder and better than your regular evil resident in every possible way. And that's a fairly big call to make.

The game takes place over some 2,000 years of human history. Over this period, you'll be granted control of twelve characters, all somehow linked to the ominously named 'Tome of Darkness'. The characters range from a Roman Centurion on a quest to please his master (not like *that!*), to a young Cambodian chick in the 1400s.

The game always feels fresh, thanks to the ability to swap between these characters, as each has very different physical attributes and

weaponry. All of these characters and their tales are also linked in some way to the central character of the game, Alexandra Roivas, a girl from the present who decides to investigate the violent (read: beheading) death of her grandfather. Most of the stories that revolve around these twelve all take place in the same location, but due to the huge time differences the location is suitably different while remaining eerily familiar.

These intertwining tales combine to make the central story within *Eternal Darkness* one of the most riveting, gripping and engrossing stories ever told within a computer game – you're looking at least 20 hours of gameplay.

The game uses the same Resident Evil slasher/puzzle format, but these elements are light years ahead of anything seen in RE. Although the puzzles are suitably fiendish, a couple will have you questioning your own sanity, and while not a serious flaw, all I can say is thank god for www.gamefaqs.com.


Combat works very well, with certain weapon types suitable for each character and environment. So equipping the weakling monk with a three-foot long double-edged sword in a two-foot wide hall is a bad idea, as he'll spend most of his time smacking the sword into the wall instead of the flesh of his target.

Individual body parts can be hacked or shot off, and watching a group of zombies – whose heads you've so kindly removed – going for each other is always a laugh. There is also a comprehensive magic system that proves to be invaluable for puzzle solving and extricating

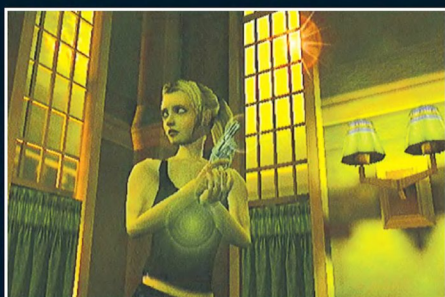
your tasty 'fleshie' butt from hairy situations.

The most innovative feature of the game has to be its sanity meter. This decreases every time you see a creature, and can only be recovered by executing finishing moves on your fallen target, or by using a spell. I don't want to give away too many details, but the truly bizarre things that can happen with this will bring on the goose bumps and spine shivers at a disturbingly regular rate.

Graphically the game is, for the most part, quite spectacular, but can occasionally feel a little average. Thanks to the true 3D engine, the camera problems of Resident Evil are non-existent, and the game feels much more cinematic thanks to sweeping pan and zoom shots. It also makes extensive use of rich texturing and lighting effects to convey atmosphere. The texturing is especially worthy of mention – all are chillingly realistic and demand attention. Music and sound effects are exceptional, and the game has full Dolby support. The haunting tunes and eerie sounds really make the environments, and provide loads of atmosphere for the player.

Every element of *Eternal Darkness* reeks of quality and soul, with a level of gameplay that reveals a very playable, and more mature side of the GameCube, and Nintendo. 

9.5/10



GAME DETAILS

 **FOR:** The creepiest game since the Resident Evil series, which totally exudes soul, and delivers a brilliant insanity feature.

 **AGAINST:** Can only be played late at night to get the full effect, puzzles can be frustrating at times, graphics are occasionally average.

DEVELOPER: Silicon Knights www.siliconknights.com

PUBLISHER: Nintendo www.nintendo.com.au

DISTRIBUTOR: Nintendo www.nintendo.com.au

PHONE: Nintendo (03) 9730 9900

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Auto Modellista

George Soropos pulls out his magic scoring marker and gives a slash.



ABOVE: Go Speedracer. . . Go! Or not. . .



ABOVE: A cell-shaded parking spot is a good thing



ABOVE: Exhausting view from the muffler-cam

Auto Modellista isn't the first game to make use of cell-shaded animation. Sega's Jet Set Radio for the Dreamcast sent the console industry gabbing about the wonders of the technique a few years back. However no one could have expected to see it used in the racing genre. We all assumed that the simple question of 'Why?' would be enough to put a stop to any such thoughts, but here we are with Capcom's Auto Modellista looking all *Speedracer*-ish and cool.

In a market absolutely saturated with racing titles, developers are forced to make a product that immediately stands out from the crowd – as Atomicans though, we require a bit more from our games than just posturing. Is there anything positive to be gained from using such a cartoon-like presentation? It's hard to see it if there is.

By abandoning conventional texture-based graphics, much of the impression of movement and speed has been lost. Seeing the grainy bitumen and grimy buildings whizzing past helps your brain to analyse what it's seeing as movement and speed. Without the texture on screen there is less to fool your mind into seeing movement and the developer has to resort to tricks in order to compensate. The screen constantly flickers with cartoon-like speed lines and your tires spark with random white flashes (who knows how. . .) as they lose traction in order to let you see when they are slipping. Cell-shaded corners are harder to spot and trackside detail becomes a mess of squares and

triangles. To overcome this problem, corners are flagged with rally-style arrows.

The overall design of Modellista borrows from Gran Turismo in that the game has a detailed career mode as well as the usual arcade challenge. However instead of competing for prize money, Modellista's 'Garage Life' mode unlocks new car parts as you win races. Unfortunately there is another obvious design mistake here as the player is given far too many parts early on in the game, making the difficulty curve look more like a slippery slide that comes off as a sharp inclination, rather than a nice upward climb.

From the outset it is possible to set up a machine that can't be matched by your opponents until quite a bit later in the game. This immediately takes the challenge out of the gameplay and can quickly bore an experienced gamer into indifference once they've overcome the gee-whiz factor of the game's presentation.

When it comes to handling these cartoon racing machines, you'll find that their physics are a little on the Hanna Barberra-side of things as well. Many of these vehicles have already seen an outing in the Gran Turismo series but here their handling characteristics are very different. Auto Modellista is a very forgiving seductress. She doesn't want you to spin out and blow your chances, and so she makes it rather difficult to do so. Hitting barriers and walls doesn't seem to have any detrimental effect on your forward progress, and swipes from other cars usually just

straighten you out and help you on your way! These characteristics were obviously included to make a certain part of the game more fun. Sadly for us it's a part of the game only made available to players in Japan and the US – online play!

One advantage Auto Modellista does have over many other console racers is a good AI. Once you get well into the game your opponents will really try to beat, and stay ahead of you, not just circulate around at their own speed, as in GT. However as we mentioned previously the really big, huge massively cool thing about Auto Modellista – and its one great redeeming feature – is not going to be available here.

Japanese (and soon US) gamers are enjoying the online modes built into the game but here in Oz (thank you Telstra) it is a different story. Because of the costs involved Sony has been slow in establishing the framework for its online operations over here and therefore there will be no PAL support for that aspect of the game — indeed the best aspect of the game!

With no online support it's difficult to recommend Auto Modellista as anything more than a curiosity, and with so many choices at this time of year it really isn't enough. ○

6.5/10



GAME DETAILS

○ **FOR:** Innovative cell-shaded presentation spurs initial curiosity, particularly for fans of the technique; and the mechanics are simple and fun.

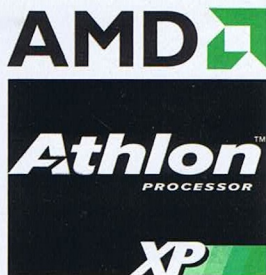
○ **AGAINST:** The un-realism puts it more in the Ridge Racer rather than Gran Turismo category; and no online play Down Under is a huge disappointment.

DEVELOPER: Capcom www.capcom.com

PUBLISHER: Capcom www.capcom.com

DISTRIBUTOR: THQ www.thq.com.au

PHONE: THQ (03) 9573 9207



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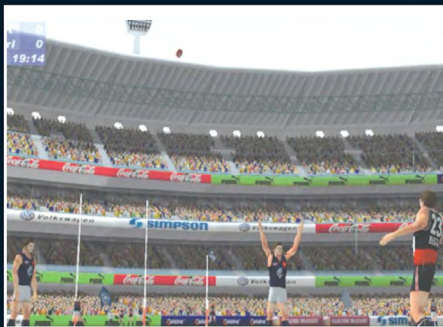
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AFL Live 2003

Want some hardcore ball action? Des McNicholas shows you how to get a good ruck.



ABOVE: And with one deft motion: 'Ball? What ball?'



ABOVE: 'A ruck? Sorry, I must've misheard you.'



ABOVE: At times, depth can be hard to judge.

Bringing Aussie Rules to consoles is a big ask. Forty players, almost as many umpires and 360 degrees' worth of choices for every kick makes it a slightly tougher challenge than the average sports title, while the lack of a wider world market means that publishers are taking a bigger risk than usual.

Fortunately, Acclaim and Australia's own IR Gurus Interactive have risen to the task and brought footy finals fever to the Xbox. AFL Live 2003 doesn't quite match some recent sports titles in the atmosphere, polish and detail stakes, but it's not too far off the mark and fans should be very happy with the way it plays.

Featuring all the stars and teams from the 2002 season, AFL Live 2003 gives players the chance to play a single game or tackle the 22-round home and away season. Those without any patience can jump straight into a finals round, and anyone with friends can try split screen multiplayer for up to four players. It's a relatively small mix of game modes that could have been spiced up by extra competitions, and some players will be a little disappointed with the lack of imagination. Six stadiums are available, including the MCG, Adelaide's Football Park (AAMI Stadium), Docklands, the SCG, the Gabba and Subiaco, all of which are terrifically well modelled. An automatic camera system shows them off nicely and players will recognise a host of little details.

In keeping with its simple approach to designing the interface, IR Gurus has kept the pre-play setup options to a minimum and most

players will be contesting the centre bounce within a couple of minutes of opening the box. After settling on the venue, time of day and weather, players visit the Team Setup screen to pick the run-on side, the interchange bench and the reserve list. Swapping players around is a straightforward process using some simple button combinations, but no tactical team options are available. Coaching legend Kevin Sheedy throws in some useful advice on team selection, and then it's time for the team to run through its banner and onto the field.

AFL Live 2003 looks and sounds terrific once the match begins, thanks to some excellent motion capture animations and a lively crowd. Fans wearing the right team colours sit behind the goals, offering plenty of advice to the umpires and opposition. The commentary is well handled by Channel 10's Stephen Quartermain and ex-player Gary Lyon, who provide some decent insights without dominating proceedings. It's a little disjointed at times, particularly when names are spliced in, but the commentary keeps up with the action and players can always turn it down if they've had enough. In-game sounds like kicks and tackles are spot-on, and it's always good to hear the team song after a crushing victory. A kick HUD and radar are provided, and player statistics can be called up as needed.

Control systems are always a tricky issue with team sports, as complex moves draw complaints from quick match lovers and serious fans just want to get stuck into the

detail. IR Gurus has opted for an easy-to-learn system that some players might find simplistic, balanced by reasonably clever AI and some conscientious umpiring. Unfortunately, Aussie Rules calls for fine judgement over long distances and AFL Live 2003 is a little hit and miss at times. Just finding who to kick to is a big enough challenge (as is judging distance), and it would be nice to have some choices about the type of kick to use when you finally do. The controls certainly allow for fast-paced games (and they're very good for multiplayer), but boredom may set in quickly for some players.

AFL Live 2003 is a strong Australian title that does a good job of bringing Aussie Rules to the Xbox. The relative lack of choices and play options will be a disappointment for those used to the extravaganzas of recent times, but the AFL atmosphere is well captured and the basic gameplay elements are solid. The uncluttered game screen looks outstanding and the game flows well despite the large number of characters on the ground and the high quality environmental graphics. AFL Live 2003 is a terrific example of Australian development work, that will hopefully lay the foundation for a long-term series. Also available on PS2 and PC.

8/10



GAME DETAILS

FOR: Looks great; shallow learning curve; easy-to-learn controls; solid and smooth-flowing gameplay. Excellent multiplayer.

AGAINST: Simplistic controls; limited choices; and no real choice of kicking style. No guide-dog option for umpires!

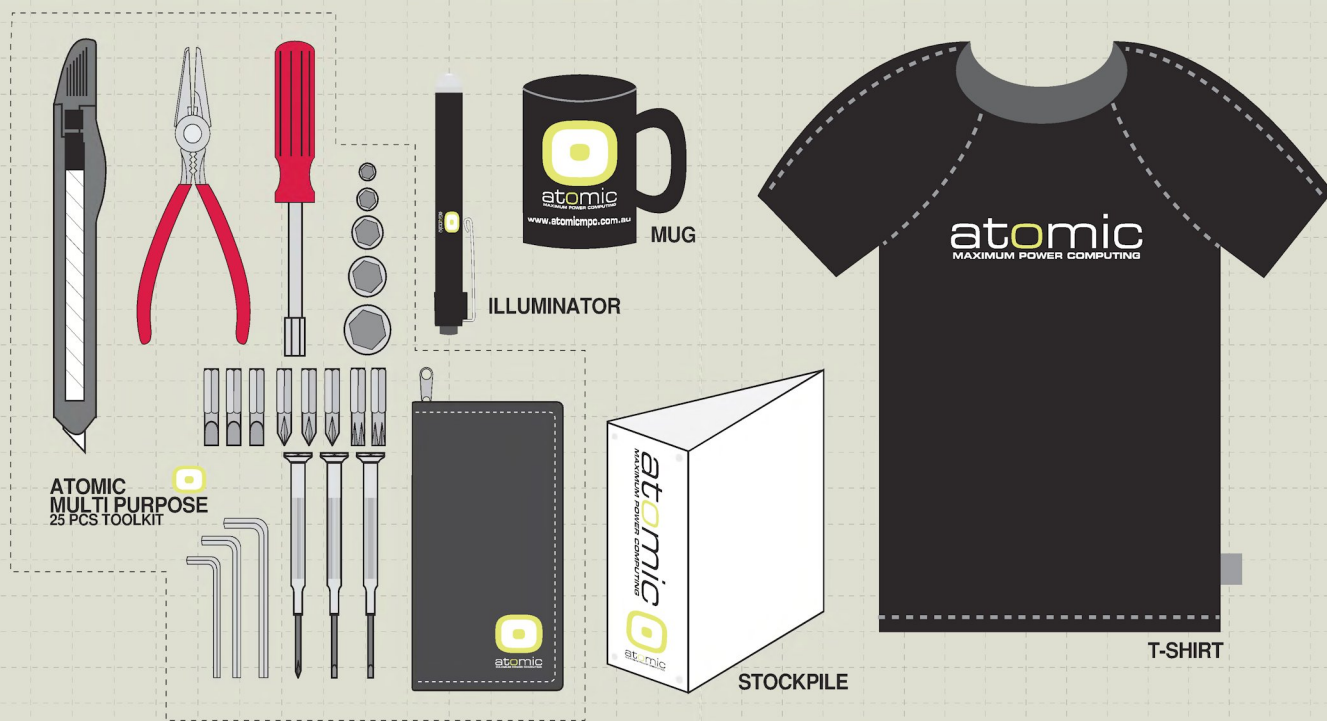
DEVELOPER: IR Gurus Interactive www.irgurus.com

PUBLISHER: Acclaim www.acclaimau.com

DISTRIBUTOR: Acclaim www.acclaimau.com

PHONE: Acclaim (03) 96745900

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i/o, i/o, it's broken, dear god no!

Most PC mags have a 'Holy mother of god, my life is toast because my router's rooted, help me [magazine name], you're my only hope!' letters section. Ours is different because we go beyond driver re-installs and 'try a different PCI slot'. And we have Dan. Plus, we have the truly rocking new Logitech MX-500 wondermouse for best i/o each month. Suck on that [insert magazine name].



i IOOTM: Files? Uh, hello? Files?

A while ago I decided to use WinXP Pro's fancy Encrypted File System (EFS).

I figured my files were important enough to not be viewed by anyone else in the world (password lists, prOn, the usual stuff).

Anyway, a while after this I decided to dual boot with Win2000 Server to help with my studies at TAFE.

Anyway, long story short, the dual-boot part of the drive corrupted for some reason, and I was left with no other option but to format the whole drive.

I wasn't too worried, because my encrypted files were kept on another drive, so I figured I was safe to proceed.

Once XP was reinstalled I went back to my encrypted files only to find out that I no longer had access rights to them. I reinstalled with the exact same settings as the previous installation, but apparently that didn't matter, because XP has built-in features that make every installation different from the last.

Is there a way for me to decrypt these files, without asking the Pentagon for help?

Dutch

O You're boned. If you have a backup of the administrator account's private key then you can recover the files (see <http://support.microsoft.com/default.aspx?scid=KB;EN-US;Q255742&>), but it doesn't sound as if you have.

Encryption is meant to stop people who don't have the right certificates from accessing the files. You should have backed up the recovery agent certificate and/or the personal user certificate after you encrypted the files.

As you've noticed, every WinXP install has a different Security Identifier (SID), and generates new certificates. Otherwise anybody could crack EFS encryption by simply reinstalling Windows, so they were the Administrator of the new install.

EFS, when used by individuals who haven't made sure they know what they're doing, is recognised as being a guarantee that sooner or later those individuals are going to lose their files.

One useful phrase used to describe EFS in this situation is 'delayed Recycle Bin'.

i Dragging me down

Hi, I'm a hardcore gamer with hardly any money.

I have a Celeron 600@855MHz with a big Globalwin WBK-38 keeping it cool. I also have an ASUS GeForce2 MX 32MB, overclocked: 166@170MHz/205@210MHz, and 384MB of RAM. All this rests on an ASUS CUV4X motherboard and I am planning to get an ASUS GeForce4 Ti4200 128MB Deluxe. It has a core speed of 260MHz and a memory speed of 275MHz – with 3.3ns DDR, this makes it the fastest Ti4200 out there, in my opinion.

My question is: will this GeForce4 and my Celeron 855MHz give me a big boost?

I know the Ti4200 will help a lot, but people say that my CPU will drag my video card down and will not work at its maximum potential. They say I will need at least an Athlon XP 2000+ to see the card really perform. I want to know if this is true?

Tom DeVIL

O In answer to your question, it's not really accurate to say that a slow-ish CPU will 'drag down' a fast graphics card. Basically, the way it works is that the CPU determines the fastest frame rate you're going to be able to manage with any graphics card, and the graphics card determines the fastest frame rate you can manage at a given resolution with *any* CPU. This isn't *exactly* the deal, thanks to the expanded hardware rendering capabilities of modern 3D cards, which can take some load off the CPU, but it still really much holds.

So let's say you're playing some game on your 855MHz Celeron with its GeForce2 MX, and you notice that the maximum frame rate you get, even if you wind the resolution down to something stupid like 320 x 240, is 50 frames per second.

If you wind the resolution up to 1,280 x 960, on the other hand, your frame rate drops to 25fps.

Upgrading your GeForce2 MX to a GeForce4 Ti won't make much difference to the ceiling frame rate at low resolutions, if it makes any difference at all. But now 1,280 x 960 will still be at the ceiling frame rate – the CPU won't have to wait for the graphics card at higher resolutions any more. In fact, the Ti4200 will probably even give you 50fps at 1,280 x 960, or higher, with FSAA turned on.

i Mounting Rainier

After reading in the September edition of *Atomic* about the ASUS CRW-4816A, I wanted one.

Is it possible for other non-Mount-Rainier-supported CD burners or CD-ROMs or DVD-ROMs to read Mount Rainier formatted discs?

Does the ASUS burner format CD-R and CD-RW disks in the Mount Rainier format?

Is data written to CD-RW discs in general of lower quality than data on CD-Rs?

Glenn Mitchell

O The Mount Rainier standard, for people who came in late, is an updated and streamlined form of packet writing for CD-RW. It aims to make CD-RWs work as much like ordinary read-write media as possible.

Packet writing software already lets you drag-and-drop files onto CD-RW (and CD-R) discs in an intuitive fashion, but Mount Rainier doesn't make you spend time pre-formatting discs, has better defect management (so discs that are going flaky can still be safely used) and is supposed to come built into operating systems 'Real Soon Now'.

To create Mount Rainier discs, you need a drive that supports the new standard, like the CRW-4816A. You can *read* the resulting discs in any drive that supports CD-RWs, but the official Mount Rainier FAQ (at www.mt-rainier.org) says you'll need a 'defect re-mapping driver' installed to do it, which means third-party software, at the moment.

The bundled software that comes with Mount Rainier capable drives should take care of the problem for the OSes it supports; other third party software, such as Software Architects' (www.softarch.com) SAI, comes with read utilities that make Mount Rainier discs legible with any Universal Disk Format (UDF) compatible drive and Windows version. That means you will be OK with that software, any somewhat-current drive, and any somewhat-recent version of Windows.

None of this is terribly important, as without native OS support for Mount Rainier, it really doesn't do much that regular packet writing software doesn't.

By the time OSes have Mount Rainier support built-in, they'll no doubt have defect re-mapping drivers as well.

The archival qualities of CD-RW are hard to determine, but they don't seem to be any worse than CD-R. If you can read a CD-RW today, and if you store it sensibly, you ought to be able to read it in five years.

As far as readability goes, though, all things being equal, CD-RWs that have been blanked and rewritten a few times aren't as good as CD-Rs, which in turn aren't as good as proper CDs.

In ideal circumstances, CD-RW discs can indeed be written to many hundreds of times, as the promotional blurbs often say.

In the real world, damage to the discs and inadequacies in readers and writers bring the useful number of writes you can achieve on cheap CD-RWs down massively, to something like 50 at best, and maybe not more than a dozen in the worst cases.

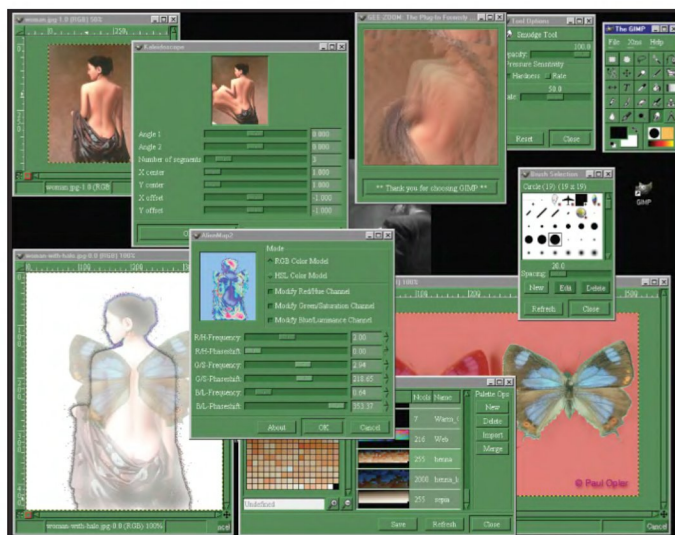
Buy quality CD-RWs and treat them very carefully (the same way we used to treat old-fashioned hard-platter SyQuest cartridges. . .) and use good drives as well, and you may be able to get a few hundred rewrites out of CD-RW. Just don't bet on it.

i Laws broken, cheap rates

I have a problem with Paint Shop Pro: even though I installed a crack to stop it expiring, it has still expired. I tried reinstalling it, but the stupid thing still says it has expired.

How does it even know when it expired if it has been wiped out? Please help me get around this, because I can't afford to pay \$240 to register it!

Rohan Burnett



ABOVE: The GIMP – great for honest people. And also for dishonest people who can't figure out how to rip off Photoshop.

O Has someone put that 'Get Yo Warez Here!' sign up outside again? I hate when that happens.

I'm not going to help you with software piracy. Sorry.

You might like, however, to check out The GNU Image Manipulation Program, affectionately known as The GIMP: www.gimp.org

It's quite a powerful image manipulation package that can do everything most people want to do. And it's a genuinely, actually, legally free, download.

i Foot, meet bullet

My computer can't open EXE files.

There would be nothing wrong if my OS were Linux, but my OS is Win98. Sigh.

I have a program called IrfanView, that can open picture files, icon files etc. It has the ability also to show the icons of EXE files, but you have to enable that.

I wanted to see what would happen if I ticked '*.exe' as one of IrfanView's file types. I started to get worried when I went to 'Shut Down. . .' in the Start Menu and all that came up was IrfanView telling me that the icon of this program was a computer monitor with a star on it. No other EXE files would work either. This is getting out of hand.

Evan Armstrong

O Select Tools -> Folder Options from an Explorer window. Go to the File Types tab. See if there's an EXE extension listed. If there is, delete it. Click New, type EXE in the File Extension dialog box. Click Advanced, and pick 'Application' as the Associated File Type for that extension. OK your way out. Bing, EXEs are back.

(This, by the way, is a rather amusing thing to do to the computer of a person you don't like. I didn't say that.)

i Strange settings

A while ago I purchased an ASUS A7M266 motherboard. It's not the fastest, but I'm in the process of tweaking it to run more efficiently.

Some BIOS settings for DDR-RAM exist that I can't find reference to anywhere, not even in the manual! I was hoping you could shed some light on the topic and advise me on the best combination of settings. The options are:

- Software DDR PDL Delay
- DDR Slew Rate
- DDR Command Driving
- DDR DQS Driving
- DDR MAA & MAB Driving
- SDRAM CAS Latency
- SDRAM RAS Precharge Time
- SDRAM RAS To CAS Delay

Michael Breedon



ABOVE: It all makes perfect sense to us experts.

O You know something that people in retail PC stores hate? Customers who twiddle everything.

Sometimes they admit to it, sometimes they swear up and down that they changed not a thing. But when you get a motherboard back from someone who insists it never worked, right out of the box, despite the fact that every possible thing that *could* be changed *has* been – all IDE channels disabled, clock set to next century, all jumpers and DIP switches randomly reset, FSB and multiplier presumably wound through the roof, but who can tell, because the changes mean the board won't boot without a CMOS reset anyway – certain assumptions can safely be made.

Obscure RAM tweaks are just *made* for pathological twiddlers. If you're not a motherboard and/or memory engineer then there's practically certainly never going to be any reason in the universe to fool with drive voltages and slew rates and the other oddball settings, but some motherboards let you, nonetheless. The CAS latency setting actually has some bearing on performance, though not a large one. You can use it to force the Column Address Strobe latency of your RAM lower if you know it can take it (if it can't, your computer will just hang), and you can also force the CAS latency higher, if you're running a high RAM bus speed for some reason and want to make sure your RAM isn't over-stretched.

CAS latency has a really, *really* small impact on performance, though; don't expect anything noticeable to happen, outside RAM benchmark programs. Similarly, reducing RAS to CAS delay and RAS precharge time, if you can do it without losing stability, will give you minuscule performance

gains. The rest of the abstruse RAM settings aren't even visible in most BIOS setup programs, for the perfectly good reason that it's very unlikely to ever be a time when any user, no matter how tweak-obsessed, will need to use them.

i Mystery module

I want to upgrade my Dell PC. It has a single 128MB RIMM. The computer has two memory slots, one with the RIMM in it, and the other one with a module in it that looks blank but with a capacitor or two on it.

Do I have to change both modules, or just remove the blank looking one and replace it with another module?

Richard Stiller



Your computer has single channel Rambus memory (so I presume it's a Pentium III; Rambus P4s are all dual channel, and need their RAM installed in matched pairs). The 'blank' RIMM is a Continuity RIMM Module or C-RIMM; it's there because Rambus memory slots are connected together in daisy-chain fashion, and won't work if they're not all filled with something.

You should just be able to remove the C-RIMM and replace it with another module of the same type of RAM as the one you've got; it doesn't need to be the same capacity. Your BIOS should tell whether the module you have either PC600 or PC800 RDRAM.

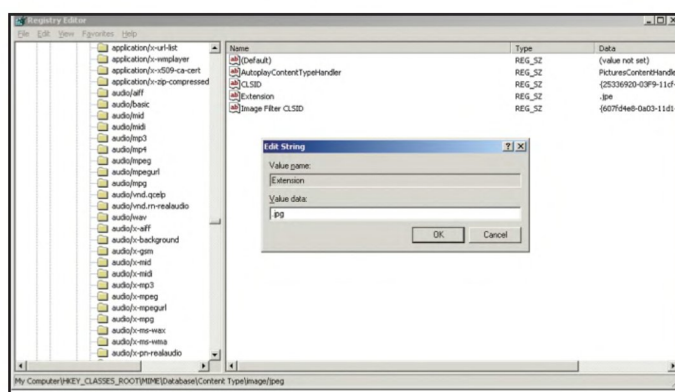


WTF is JPE?

When I right click 'Save Picture As. . .' in Internet Explorer (IE6 on WinXP), it always defaults to saving JPG files with a JPE extension.

I know that JPE and JPG files are the same, but I'd rather have the JPG extension, because some programs only look for files that match '*.jpg'. Can this be fixed?

Morris Umali



ABOVE: Editing the registry. Exciting, isn't it?



This is fixable, by editing the registry.

Run Regedit (Start -> Run -> type 'regedit') and click your way through to HKEY_CLASSES_ROOT\MIME\Database\Content Type\image/jpeg.

The value of the 'Extension' key in the right hand Regedit pane is, I think you'll find, '.jpe'.

If you double click it and change it to '.jpg', IE should start saving files with the right extension again. No rebooting required.

Note that the save dialogue may not show *any* extension on the filename any more, but the 'Save as type:' drop-down will be set to 'JPEG (*.jpg)', and the actual saved filename should be correct.

Phr33x tw33x

Each month we present the best of our user submitted tweaks. We test them, explain what they do and give them a rating of *Atomic* goodness. Send your coolest, most bad-arse tweaks to phr33xtw33x@atomicmpc.com.au and help make the world a better place.

Getting Windows XP services working better for you

I: Precious resources can be freed by disabling a number of redundant or unused services in XP, 2K or NT, giving more room for applications, network bandwidth and so on. While many of these services are critical to the smooth operation of Windows, and should be left as they are, there are others that are plain useless and should be nuked.

FartyPants

O: Windows NT, 2K and XP run a bunch of services in the background – regardless of whether you will ever use them or not – and they all use valuable system and network resources. It's fairly easy to free up these resources by stopping or disabling background services: go to Start -> Settings -> Control Panel -> Administrative Tools -> Services, then double click on the service you wish to edit. Or alternatively, type 'services.msc' into the Start -> Run input box.

These recommended settings are XP specific (I haven't messed with them too much under Windows 2000) and there are a bunch of services not listed here.

There are three startup types to any Windows service: Automatic, Manual and Disabled.

'Automatic' indicates the service will be started when the OS loads.

'Manual' means the service will not start until required.

'Disabled' shows the service is not available, even if called on by an application.

Not all the recommendations here will be appropriate in all circumstances, but most of them will free up system resources or reduce network overhead, so decide which services are best for you.

Obviously there are all kinds of opinions on which services are best left at default and which are best for messing with, so it's a 'suck it and see' type of deal.

At www.blkviper.com/WinXP/xpprofiles.htm you will find a cute little tutorial on setting up different service profiles, so you can mess with multiple configurations for different tasks or users.

Here are some recommendations that might suit your system. Of course, use them at your own risk, because what works on some systems might well break others.

Automatic Updates – Allows Microsoft to update your Windows installation automatically without even asking. Disable this service and you can still update manually.

ClipBook – Allows others to view the content of your clipbook over a network. Pfft... boring. Set this one to disable.

Distributed Link Tracking Client – Maintains links between NTFS files within a computer or across computers in a network domain. Disable if you are not using an NTFS partition, or not on a network.

Distributed Transaction Coordinator – Co-ordinates database transactions, file systems and message queues. No biggie, disable it.

DNS Client – Resolves and caches Domain Name System (DNS)

names for your computer. If the service is stopped, the system will look elsewhere to resolve DNS names. If it can't find an alternative DNS, cable/ADSL users may have some problems. Disable, but be prepared to set this to Automatic should things go weird.

IPSEC Services – Manages IP security policies and starts the ISAKMP/Oakley (IKE) and the IP security driver, allowing for authentication of hosts before file transfers, as well as other tools for the paranoid. Set this sucker to Manual.

Messenger – This is not to be confused with Microsoft Messenger. It allows you to send and receive messages across the network, for example using the NETSEND command (fun at LANs). If the Alerter service has been set to manual, then you can do the same to this one.

Network DDE and Network DDE DSDM – Network transport and security for Dynamic Data Exchange (DDE) for programs running on the same computer or on different computers (such as Office collaboration). Manual.

NetMeeting Remote Desktop Sharing – Allows remote access of your computer across a network. Disable this unless specifically needed.

NT LM Security Support Provider – Support for Telnet and Message Queuing. Disable, unless you actually require it.

Performance Logs and Alerts – Monitors system performance of local or remote computers, based on defined schedules. There are better tools available to do this. Disable it.

Portable Media Serial Number – Unless you have a portable media player connected then running this service is pointless. Disable it.

Print Spooler – If you don't have a printer then disable this. Else, set it to automatic.

QoS RSVP – Isn't it strange that a tool that is supposed to monitor bandwidth to assist in optimisation by load balancing bandwidth between applications, uses up to 25% of your bandwidth in the process? Disable this.

Remote Desktop Help Session Manager – Unless you are into remote desktops, disable.

Remote Registry – Gee, this is handy. A user can remotely edit my registry. Err... no thanks. Disable.

Smart Card – Hands up anyone who uses smart cards at home? Unless you do, you should disable.

Smart Card Helper – If you've disabled the above service, then you should disable this one also.

System Restore Service – Up to you. If you disable it, your system will no longer take snap-shots of itself for use by System Restore. Feel game? Disabling it will free up resources.

TCP/IP NetBIOS Helper – A throwback to the networking days of olde, which is not really relevant in most current networks. Disable unless you are sentimental about those things.

Volume Shadow Copy – Handles volume shadow copies for use in backup utilities. Most people can disable this.

Wireless Zero Configuration – Lucky owners of 802.11 wireless networks will want this. Everyone else, disable.

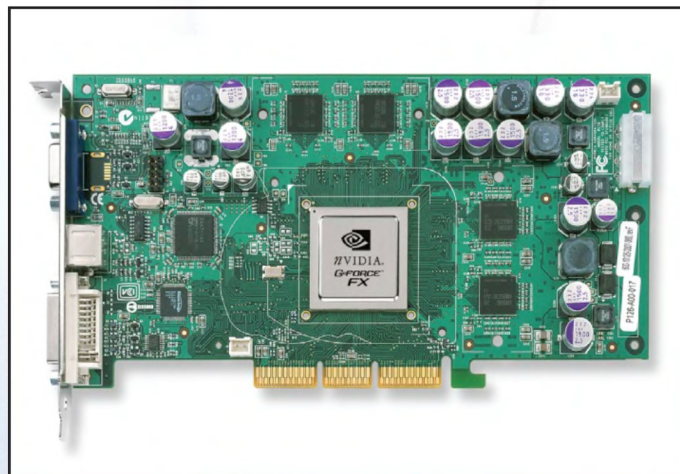
1337ness 6/10 (not all settings will work on all systems)

SUB ATOMIC

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Search for a super model: 3D tutorial v1.0

Can you have too many well-rendered 3D graphics in your life? No. Ivon Smith introduces you to the techniques used by the 3D masters of film, music video, animation – and yes, games – so that you can make your own 3D animations and turn your back on reality.

As Atomicans we're tech heads, games freaks and fans of all things computer related. Tech savvy would be common too. Many of us would be sci-fi fans, movie buffs, and special FX addicts on top of our very *Atomic* passions for supremely powerful CPUs, graphics cards and mobos. So it's an easy assumption to make that among the varied and unique *Atomic* readers out there, there would also have to be many a fan of 3D graphics. This might take the form of games, movie special FX or even music videos, TV or magazine ads. Some of you might already be professional computer artists, others, amateur 2D/3D designers building the skills to maybe turn pro, and others, perhaps gamers or movie fans, that would love to know how 3D graphics in their favorite games or movies are created.

Well, what follows in our latest tutorial series introduces *Atomic* readers to the world of 3D graphics content creation. We will be starting from absolute basics for those who have no knowledge or experience at all in 3D, working our way through the interface of a leading 3D software application. We'll cover what can be done and how to do it yourself, introducing basic functionality and model design and creation, moving onto intermediate and more advanced 3D modeling techniques such as lighting, texturing, cameras and other cool effects.

Of course, it wouldn't be *Atomic* to just show you how to build things – they have to do something apart from look amazing – so we'll also cover 3D animation techniques.

During this series we'll look at creation methods for different kinds of 3D model objects, from everyday items to more complex or technical things such as terrain creation and even character creation.

Ultimately, each 3D character model needs an entire control skeleton built from the ground up, using bones, custom controllers and IK (Inverse Kinematics) chains. This allows us to animate the character with the control rig.

Full character rigging, control and animation must be one of the most demanding and technical areas of 3D graphics work and is seldom covered properly in tutorials or even textbooks that claim to teach character animation. Segments are often covered in great detail

to animate a leg or a hand or a body section, but for the inexperienced 3D user it can be hard to design and build an entire skeleton with easy-to-use controllers that can take care of all the body parts in a real useable animation situation.

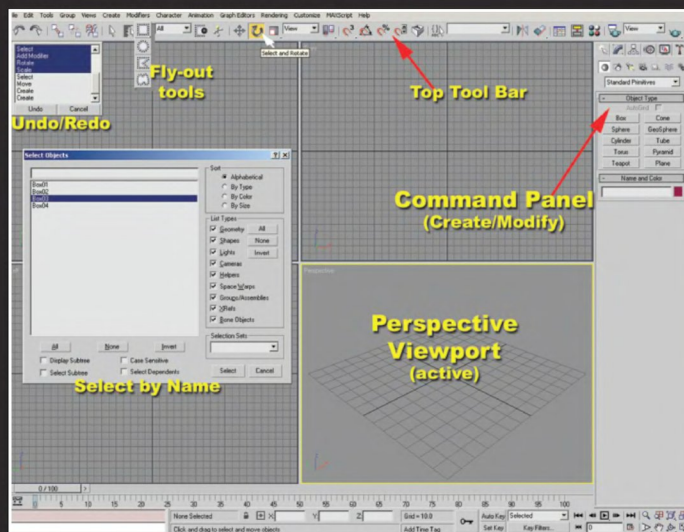
Atomic's 3D tutorials will take you through it, step by step, so you can actually use the skeletons for animation. Such a rig could also be adopted and used on other 3D character models you may make or download.

3D software applications

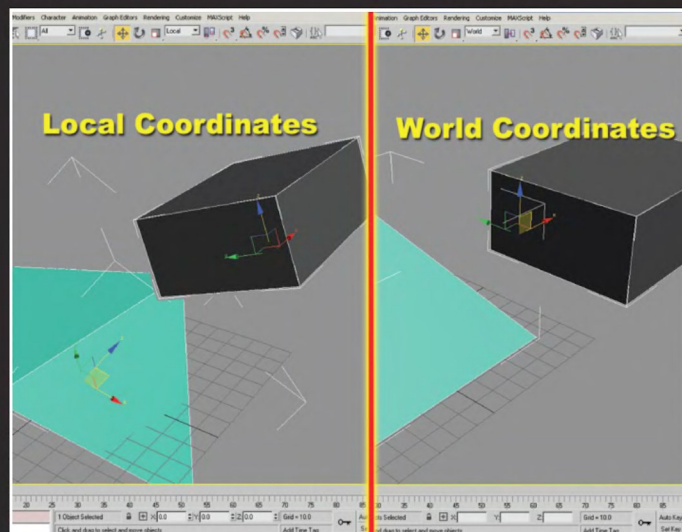
Rather than skim the surface of a whole host of 3D applications, we'll concentrate on two very similar applications: discreet's 3ds max and gmax. In 3ds max we'll use version 4.0 and the newly released version 5.0, and gmax version 1.2.

3ds max is one of the world's most widely used professional 3D applications, and a freely available demo version of 3ds max5 is now available from the Website www.discreet.com where you can order the CD (alternatively, you can get in touch with the Australian distributor Scholastic New Media), and you can also download a fully functional version of gmax while you're at it. As 3ds max and gmax have very similar interfaces and many common tools, readers can follow along on either program in many of the tutorial stages. While 3ds max has a host of extra and advanced tools, image rendering and model smoothing capabilities, given that gmax is totally free it has a great and similar modelling toolset. gmax has been developed in coordination with games development companies allowing gamers to build their own 3D models and characters to customise and expand games that have been developed with gmax capability. Microsoft's Dungeon Siege and Flight Simulator spring to mind as examples of games that include models created using gmax.

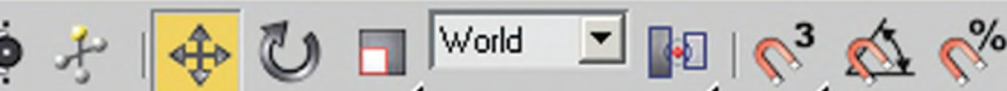
Versions 4.0 and 5.0 of 3ds max have many very similar functions, but the newer version includes extra elements such as advanced lighting, extra modelling tools and extended character setups. Any differences between the two will be noted for users of either version.



ABOVE: 3ds max5 interface, tool bar and selection window.



ABOVE: Local and World coordinate Transform gizmo.



UI familiarity

The help and tutorial files that ship with 3ds max and gmax are among the best I have seen in any application, being comprehensive and searchable. That said there are areas where they go too slow, assume too much user knowledge of the interface or only do a partial job in explaining complex functions. Also, some operations and shortcuts that professionals use to ease usage and speed productivity are sometimes left out in the earlier learning stages of tutorials. Help and Tutorial files shouldn't leave the student hanging, wondering how to make the huge leap from concept to final product.

So, if something makes a process quicker, easier or requiring less thinking or mouse mileage when you're an expert, then it can only help even more when you're a novice.

I'll try to introduce as many shortcut keys and convenient extended functions of tools as early as possible to speed up your ability to enjoy the actual process of making 3D models and animating them.

Getting started: 3ds max interface

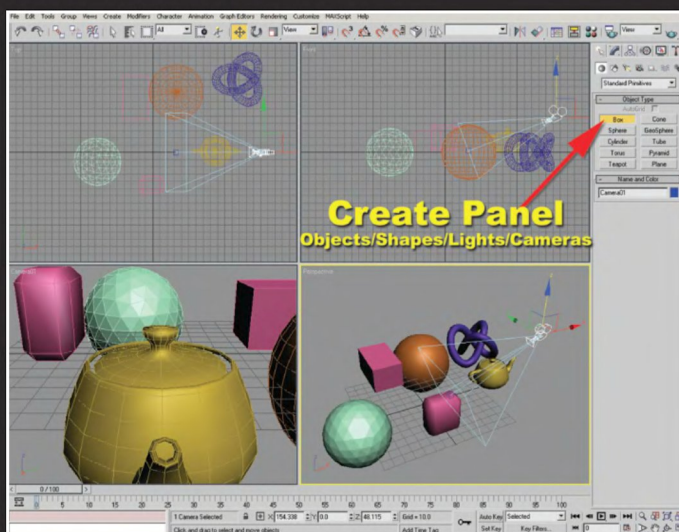
Firstly, let's look at the interface of 3ds max. It may look daunting but it follows a logical pattern when it comes to creating objects, altering and animating them. Shortcut keys are important for the efficient usage of any complex application and though many of these have changed from versions 4.0 to 5.0 in 3ds max they seem to now be more intuitive and easier to access on the keyboard via the new HotKey Map from the Help menu. This displays all the hotkeys active in 3ds max5 by holding the cursor over sections of this interactive keyboard display. This can also be fully customized to suit. Shortcut keys are shown in brackets after the mention of each operation throughout this article.

Accessing menus

While many functions can be accessed through the menus, I hardly use them except for opening files and customising the interface.

The user interface (UI) can be highly customised and altered with shortcut keys, and a number of variations can be loaded via the Customize -> Load Custom UI Scheme menu, as well as access to a list of shortcut keys and preferences. For the time being though, we'll stick to the default UI.

An important shortcut/safety mechanism in 3ds max that can undo any change you have made if you change your mind is to not let go of the left mouse button as you are making the change (scrolling a parameter value, moving an object, etc) and if you want to undo the alteration, all you need do is tap the right mouse button. The entire change will be undone.



ABOVE: Primitive objects from the Create panel.

Top tool bar

This tool bar (which can be dragged off and re-docked) holds many of the tools you'll use to select, move or manipulate objects in your scene. A useful tip is that many of these tools can reveal extra information windows (such as transform type-ins for keyboard entry of values – shortcut key F12) by right clicking them while they are active, and several have hidden (usually related) alternate functions (on a fly-out) if they show a tiny triangle on the bottom right corner of the button. These are revealed by left clicking and holding the mouse button down, then moving down to the appropriate alternate button and releasing. As with most buttons in 3ds max simply holding the mouse button over one of them will often pop-up a descriptive name of its function – very handy when searching for an elusive operation.

If your screen resolution runs at less than 1,280x1,024 not all of this tool bar will fit across your screen. So (as with other large tool bars in 3ds max) if you hold the cursor over a blank portion of it, it will change to a hand icon and you can click and drag to reveal the rest of that tool bar.

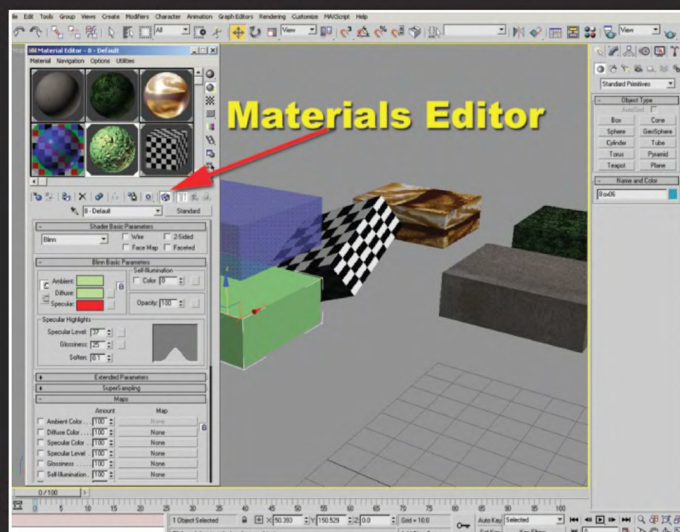
Undo and Redo

Far left of the default 3ds max5 top tool bar are two curved arrows, **Undo** (Ctrl-Z) and **Redo** (Ctrl-Y). Right clicking on either reveals a sequential operations Undo-Redo window which displays a list of operations you have performed, and by selecting one you can undo all the way back to that operation. Conversely, you could then decide to redo these in order.

(Select and) Link and Unlink

(Select and) Link and **Unlink** tools create or break a parent-child hierarchy by selecting one object, holding the cursor over it until it changes to the Link icon, and dragging to the would-be parent of the child object and releasing it when it changes again. A child object will follow and mimic its parent in operations such as transforms (move, rotate, scale), but the parent is free to move on its own. These tools are also used when creating some linkages in Inverse Kinematics (I.K.) chains within skeletons for character animation.

Bind to Space Warp will be discussed later – it is used for connecting an object or particle system to either an animatable deforming or force function (such as wave, ripple or gravity) or deflector that will alter the trajectory of moving particles. These are great when you want to make quick, immediate, and complex animations, as they produce some very cool effects!



ABOVE: Materials editor (M) window and applied textures.

Object selection

The next five buttons (only four in 3ds max4) are related to object selection. The simple **Select** tool (Q in 3ds max5) is an arrow icon used to click an object to select it (the object will then be highlighted or go white), so that it can be moved, manipulated, have its property parameters and name displayed in the Command Panel (down the right side of the UI) or modified somehow. To add to or subtract from a selected group of objects click extra objects holding the **Ctrl** key or remove objects by clicking them while holding the **Alt** key.

Applying filters

The buttons to the right of this tool alter or filter how this tool can select things. The **Select by Name (H)** tool opens a window from which you can select individual or multiple items by clicking on their respective names in this dialogue box. The items in a scene that are displayed in this dialogue box can be further filtered by check boxes on the right hand side of each entry. For example, if you only want to be able to Select by Name from all of the geometry objects and lights that are in a complex scene, uncheck all the boxes except Geometry and Lights, and then make your selection from the list of items.

The next button defines the region shape that can be dragged out for the Select tool. It has four alternate variations (only three in 3ds max4), which are accessed by clicking and holding the left mouse button as described earlier. These allow you to click and drag different shaped regions around multiple objects to select them. These include Rectangle, Circle, Fence and Lasso. These selection region tools are further altered by the next two tools: the Selection Filter drop-down list (enabling specific types of items only to be selected) and the Window/Crossing button. This toggles between only needing to touch an item with Region Select or completely encompass an item within its perimeter to select it. This latter tool is positioned on the lower tool area of the UI in 3ds max4.

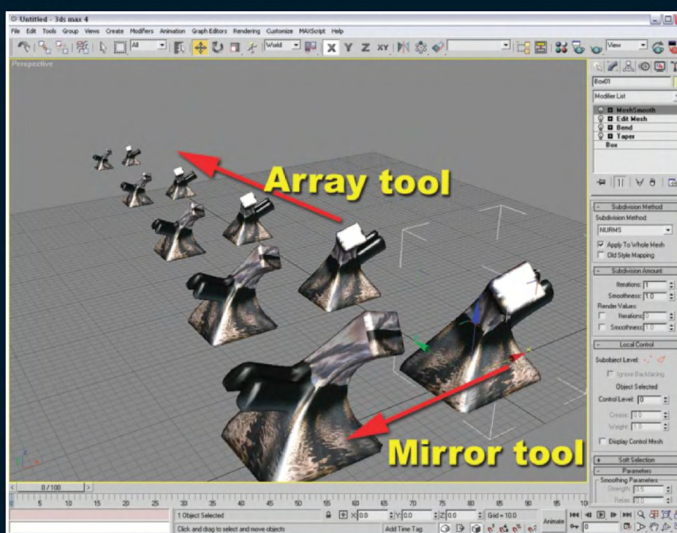
Select and Manipulate

The **Select and Manipulate** tool (positioned slightly differently in 3ds max4), to be discussed later, allows on-screen sliders or handles to be used to indirectly alter object parameters or transform values for complex animations.

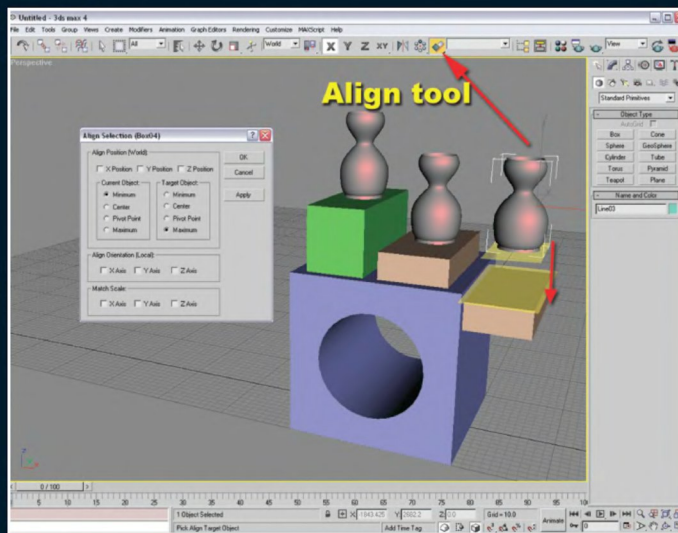
An example would be creating on-screen custom sliders to change position or orientation of a character's body parts to simplify the animation process, or even controlling the transparency of an object's material via a slider.

Transforming objects

The next three buttons access the object Transform tools, **Select and Move (W)**, **Select and Rotate (E)** and **Select and Uniform Scale (R)**, this last one having three alternate variations on a fly-out, including **Non-uniform Scale** and **Squash**. All these tools, which alter position, orientation and size of objects, make use of the Transform gizmo. 3ds max has several types of gizmo objects which are used like on-screen handles to transform an object in 3D space or to encompass an atmospheric effect within a volume, such as fog or fire. The Transform gizmo (toggles on/off with the **X** key, can be altered in display size using - and + keys) is a set of x, y, z axes displayed against the selected object which allow axis- or plane-specific transforms to be executed, and will only be displayed when one of the transform tools is selected. For instance, when the Select and Move tool is active and an object is selected, holding the cursor over the object itself or one of the transform axes (x, y or z) will change the cursor to an arrow-cross and allow moving of the object. Holding the cursor over one of the axes turns that axis yellow restraining the movement only to that specific axis direction, over the square panels at the bases of the axes (3ds max5) or the L-shaped corner section of the gizmo (3ds max4) restrains the movement (or rotation, scale) to two axes or a plane, ie. an object could thus be moved in both x and z directions, but not y. The Rotate gizmo has three separately coloured circles (3ds max5 only), which restrain the rotation to the relevant axis (in 3ds max4 this is done by clicking and dragging with the cursor over the highlighted gizmo axis). There are also two other gizmo circles displayed: the outer circle restrains rotation perpendicular to the chosen viewport that you are working in (say, in Perspective view), the other smaller grey circle allows free rotation about all axes. In 3ds max5 the angle rotated is temporarily displayed alongside the Transform gizmo as you perform the operation. In 3ds max4 such axis restriction is also displayed by an Axis Constraints section on the tool bar, which has X, Y, Z, and a fly-out planar restraints button too, for XY, YZ, ZX on it. In 3ds max5 a floating version can be displayed by right clicking on any blank portion of the top tool bar and selecting it from the list, but by default it is no longer considered necessary with the newer Transform gizmo. The scaling tools allow uniform size changes proportionally in all axes simultaneously if the cursor is held over the object somewhere (holding this tool over a gizmo axis or plane section allows size change along one or two axes only). Non-uniform scaling allows axis/plane specific size change when held over the appropriate part of the Transform gizmo. These tools have some redundancy in them now as both can do axis, planar or uniform scaling of an object when held over the relevant portion of the gizmo (the middle of the gizmo when highlighted allows



ABOVE: Mirror tool reverse-copies and Array duplicates objects.



ABOVE: Use the Align tool to accurately position objects onto surfaces.

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uniform scaling). The **Squash** tool allows similar scaling operations but always maintains the object volume as constant, ie. if you make an object shorter it will get proportionally fatter in the other axes to keep the internal volume constant. This is useful for doing manually key framed soft/elastic body deformations in an animation such as a soft/cartoon ball squashing and stretching as it bounces on the ground.

An important extra function of the transform tools is that of duplicating objects in various ways by using the tool while holding the **Shift** key.

The next tool, **Reference Coordinate System**, (a drop down list), allows you to choose what type of coordinate system you want to use for each transform of your objects. It is transform tool specific, so it needs to be chosen for move, rotate and scale individually. In 3ds max you are generally working in a 3D space environment. There are x, y and z coordinates, for left/right, up/down and back/forth. However, sometimes it is convenient to choose how these coordinates are defined. Absolute or World coordinates means that when you see a z-axis in any viewport and move an object along it, it is always moving along the same overall axis. However, choosing Local coordinates localises the x, y and z to the chosen object, as if the object carries its own coordinate axes around with it. So it has its very own left/right, up/down and back/forth that will change according to the World view as the object moves or rotates around. The other options in this list orient the axes system according to what is chosen.

Pivot points in objects

The next tool, **Use Pivot Point Centre** (with three fly-out alternatives) allows you to specify the point about which an object or multiple objects are rotated. Under, say, a World coordinate system, this can include all selected objects rotating around their own centres (Use Pivot Point Centre), a common centre point for the group of objects (Use Selection Centre) or the absolute World (0,0,0) origin point (Use Transform Coordinate Centre).

The next tools (on the lower part of the UI in 3ds max4) whose icons look like horse-shoe magnets are the **Snap Tools (S)** which allow operations such as selections or transforms to snap to chosen grid coordinates or even specified parts of objects to enable accurate positioning or modelling operations. These shall be discussed later but right clicking on the button opens up their options dialog.

The rest of the top tool bar tools will be discussed next time, except to mention the following: **Mirror Selected Objects**, which allows duplication of an object by mirroring it about specified axes; **Array** which allows multiple duplication of objects as well as progressive position, orientation or scale variations – in 3ds max5 accessed by

right clicking on the tool bar and choosing Axis Constraints; **Align (Alt-A)** which allows objects to be accurately aligned with specified parts of other objects; **Material Editor (M)** which opens a window to allow textures to be altered and applied to selected objects; and the **Render Scene (F10)** and **Quick Render** teapot buttons allow the set up and rendering of final images for output to various file formats.

That is all for now on the top tool bar. Next time we shall go into more detailed use of many of these tools.

Getting ready to experiment

Before we finish up this first instalment of the 3ds max interface I will quickly mention some of the very basic object creation tools so you can start creating simple objects and experimenting with what we've covered so far.

Viewports in 3ds max are the central areas where all the action takes place. Objects, scenes and animations are displayed in the viewport areas. By default there are four – each is activated by right clicking in it, and it becomes highlighted with a yellow border. The edges of each can be dragged to stretch it and right clicked to reset the size. An active viewport can be (toggle) maximised using the **Alt-W** shortcut (**W** in 3ds max4). The tools at the bottom right of the UI are used to manipulate the viewports, usually by selecting the tool and click-dragging within a viewport, such as **Arc Rotating** that allows the user to have a look around the scene. Other functions include the **Zoom** tool to move the view in or out or **Zoom Extents All** to fit all the objects into all of the viewports. Each viewport has its own title in the top left corner, and if this is right clicked a different **View** can be chosen such as changing Front to Right or a Camera view if there are any in the scene. Display type (wireframe, smooth + highlights, etc) can also be chosen here or toggled with the **F2** (shade selected sub-object), **F3** (smooth + highlights) and **F4** (edged faces).

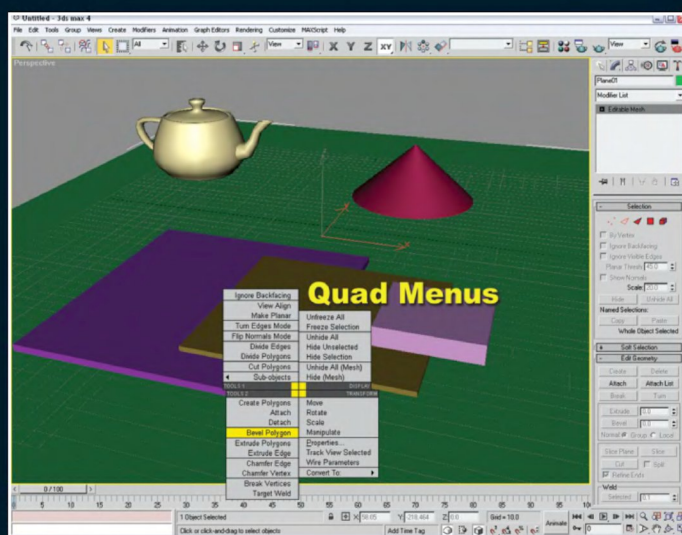
The **Command Panel** is the main area of the UI that runs down the right hand side. It contains the object creation tools, object modification tools and many other complex functions. At the top are Tabs that open up different parts of this panel. The **Create** Tab allows items of all kinds to be made in the viewports. With this Tab selected you can see below it are the category buttons for items that can be created; **Geometry** (3D objects), **Shapes** (2D shapes and splines), **Lights**, **Cameras**, **Helpers**, **Space Warps** and **Systems**. Below each of these category buttons is a drop down list that contains different types of items that can be created within that category. And below each selected list further buttons are located for each specific item/object that can be created.

For example, to create a simple 3D box; select the Create tab, Geometry button, Standard primitives drop-down list item, Box button, then click-drag in any viewport to create the base, release the mouse and move it up to create the sides, and finally click to choose the height of the box. All other items are created in similar fashion. Once an item has been created its parameters (length, width, height, radius, etc) that were displayed lower in the Create panel, move over to the **Modify Tab Panel** (the second tab in the Command panel) from where they can be changed or edited.

Finally, if you use a three-button wheel mouse you can do a lot of viewport navigation without selecting the buttons in the bottom right of the UI. Right clicking in the viewports brings up the quad-menus from which many functions can be chosen. The mouse scroll wheel can zoom in and out. Holding down the middle mouse button/scroll wheel allows panning of the viewport.

Finally, click-dragging with the middle mouse button with the **Alt** key depressed rotates the viewport, while holding **Ctrl+Alt** instead, zooms it.

Next time we will look at serious object creation and modification as well as polygon tools, and a whole host more to get us creating 3D models and scenes.



ABOVE: Right-click quad-menus display a host of modelling tools.

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*Who cares?! Look at the guy on the left, then the llama on the right - who would you rather be? Yeah, I thought so. Contact Ailean today to talk about your gaming future

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Ten copies of Age of Mythology

One can easily imagine Big Bruce Shelly and his team sitting at a table at Hooters, sipping beef slurpys and planning the next 'Age of. . .' game. The problem these guys faced was which age to build the game around. Now, seeing as the Bruce Co. had covered pretty much every age already, it would have to do a sort of 'Age of the future' game. But then that would make the new game just another clone of every other RTS game, as opposed to the innovative medieval-era game. So Bruce did what any of us would in those circumstances – he turned to the fantasy world of demons and beasts. Now you too can experience Bruce's fantasies.

Q: Who had his liver eaten every day and why?



Jaron Deluxe Water Cooling Kit

The cover of *Atomic issue 6* served as a solid reminder that cute chicks in hot pants squirting a hose is a great example of why water cooling makes your Counter-Strike server run more reliably. What you can't tell from that cover is that the day was really, really cold too, which wasn't so great for our near-naked model, but would have further helped the cool running of the PC. Unlike that cooling rig, the Jaron Deluxe Water Cooling Kit features more robust engineering, and does not require the use of a chick in hot pants. Thanks to Jaron (www.jaron.com.au) and Below Zero (www.below-0.net) for this \$530 wunder thing.

Q: According to Arthur C. Clarke, where was off-limits to humans after the aliens turned Jupiter into a sun?



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Q: What was the name of the cave that was part of the swimming pool complex at Hugh Hefner's place?



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Q: How many hours did Flash have to save the Earth, after Dale tells her that she loves him?



Email entries to win@atomicmpc.com.au or post them to: Atomic, PO Box 275, Beaconsfield NSW 2014. Please send a separate entry for each competition. Please ensure the competition name is the subject of the email, or is displayed clearly on the front of the envelope. The closing date for entries is 15 January 2003. Winners will be announced in Atomic 26.

Atomic 22 winners: EPoX 4G4A+ Q: What was the name of the singing cowboy's horse? A: 'Trigger'. T Corbett, Launceston TAS. Zalman video card cooler. Q: What was the name of the magic arcade machine in the film Big? A: 'Zoltar'. S Civallo, Guildford NSW. Altech case and RAM. Q: How do we know the universe is expanding? A: Galaxies are made up of stars and stars emit light. By measuring the light waves that these stars emit and taking into account the Doppler effect, it can be seen that the galaxies are moving in different directions and spreading out, therefore expanding. M Vicary, Hermit Park, QLD.

Terms and Conditions of Entry. 1. The promoter is AJB Publishing Pty Ltd (ACN 083 063 914) of Unit 2-5/44-70 Rosehill Street, Redfern NSW 2016. Promotion period is from 9.00am on 18.12.02 until 12.00pm on 15.01.03. 2. Entry is open to residents of Australia and New Zealand. Management and employees of AJB Publishing Pty Ltd and their immediate families, and any advertising, marketing or promotional firms associated with this promotion are not eligible to enter. 3. Enter by posting or emailing forms to AJB Publishing Pty Ltd. 4. The draw will be held at the offices of AJB Publishing Pty Ltd at 5.00pm on 15.01.03. Winners will be notified by mail and published in *Atomic 26*. The prizes are not transferable or exchangeable. 6. The judges' decision is final and no correspondence will be entered into. 7. The promoter reserves the right to publish the winner's name and suburb for promotional purposes. 8. All entries will become the property of AJB Publishing Pty Ltd.

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Let us

While almost all the correspondence we get for these pages is sent via email, ironically, we end up printing the lot on good old fashioned paper, with good old fashioned highly toxic ink. You don't really need to concern yourself with this though, as the prize for POTM and LOTM has been upgraded to the spiffy new Logitech MX500 mouse! Toxic ink? It's all in your mind.



Windows Lite

Linux has caused a stir among computer users, with its open-source code and free public license. Microsoft can offer neither of these features at the moment, as the money would stop rolling in. If it wants to combat Linux, Microsoft should stop selling Windows in its Home and Professional incarnations, but instead in a Lite version and a Pro version.

The Lite version would be free, but come with nearly nothing, except the basics that make Windows tick, networking capability and a Visual Basic editor. The Pro version must have a whole heap of useful features attached that would make it truly shine out from the Lite version, like Word, Access, massive help files and support, and easy-to-use everyday applications. This still allows Microsoft to keep Windows how it wants it, and still lets it keep the OS locked up with a clause in the EULA. It will make users who are in danger of being lost to Linux stay with Microsoft, and thus they will continue to buy software based on the Windows platform. It also forces Linux to improve, as currently many people are intimidated by it (BTW, the Uber Linux server is working, THANKU!!!!). Developers would come back in droves to Windows, bringing a new wave of software that Microsoft could acquire. People would not have to worry about Linux compatibility issues, would have more control over their own computer, and wouldn't be getting ripped off. The benefits in this case would far outweigh the costs, and doing this would make Microsoft truly *Atomic*.

James Battams

Seeing as we're not expecting Mrs M. Sese Seko to claim her mouse, we're going to send it to you instead. If she

turns up here demanding her prize, we might arrange some kind of shared-custody deal.

Anyway, back to your letter. . . You've proposed an interesting idea, and it's funny that you should bring it up at this point.

A long-winded court case involving Microsoft and 18 – only nine in the most recent case – American States was finally wrapped up just a few weeks ago after four years of sporadic deliberation.

In 1999, Microsoft was found to be in violation of the Sherman Antitrust Act, and the company was forced to divide into two parts, one developing operating systems, and the other software, such as Word. Some of the states involved were not satisfied with the ruling, and so they took Microsoft back to court, urging stronger measures.

The most extreme of these measures recommended that Microsoft release a 'cut-down' version of its Windows operating system. Although this 'Lite' version primarily involved the removal of Internet components (such as IE and Media Player) it could have quite possibly extended to other programs.

On 2 November 2002, Judge Colleen Kollar-Kotelly passed judgment on this latest case, ruling in favour of the original decision – with a few minor additions.

One of these additions required Microsoft to make some changes to Windows XP SP 1, and SP 3 for Windows 2000 that allows users to remove certain Windows applications that install by default.

So, basically, it's been tried before, with no success. Keep thinking though. There's plenty of information on the 'Net at the moment on this, so feel free to do a bit of research yourself.

Rooted router?

I would like to respond to the letter entitled 'LOTM: Optus spoilsports' in the December edition. I am through the same Optus router (rochd1-fe0.cm.optusnet.com.au) and while a traceroute stops after that router, I have been able to successfully use ssh from my last two jobs over the last 18 months to log in to my firewall, so it does work.

I use FreeBSD with ipf and restrict ssh logins from only my work machine. I am also on cable but I don't know if that is a factor.

Paul Shackel

Cheesy sound

At the moment, Atomicans can be pretty confident about buying the ultimate CPU and graphics card. The ultimate motherboard may present a slightly more taxing, but ultimately assailable decision. But what about the ultimate audio solution? The first reaction may be to grab the most expensive SoundBlaster in the shop. Or is an exotic-looking vacuum tube motherboard the way to go? In addition to these fairly mainstream solutions, there is an entire realm of PC audio hardware that most folk are unaware of. For around the same price as a top-of-the-line Sound Blaster, serious PC audio freaks can indulge in cards such as the Echo Mia and M-Audio Audiophile.

These are the cards that musicians, DJs and record producers use to create their art. These are the cards that can make a kick drum liquefy your intestines. They are the cards that belong in the hands of those insanely inspired people who seek the ultimate in PC hardware.

They do not, as a rule, provide 5.1 surround, EAX, wavetable synthesis, or even joystick ports.

LOTM: United State dollars

DEAR FRIEND,

I AM MRS. SESE-SEKO WIDOW OF LATE PRESIDENT MOBUTU SESE-SEKO OF ZAIRE? NOW KNOWN AS DEMOCRATIC REPUBLIC OF CONGO (DRC). I AM MOVED TO WRITE YOU THIS LETTER, THIS WAS IN CONFIDENCE CONSIDERING MY PRESENT CIRCUMSTANCE AND SITUATION.

I ESCAPED ALONG WITH MY HUSBAND AND TWO OF OUR SONS DOMINIC KONGOLO AND BASHER OUT OF DEMOCRATIC REPUBLIC OF CONGO (DRC) TO ABIDJAN, COTE D'IVOIRE WHERE MY FAMILY AND I SETTLED, WHILE WE LATER MOVED TO SETTLED IN MORROCO WHERE MY HUSBAND LATER DIED OF THE FUNGAL CANCER DISEASE.

HOWEVER DUE TO THIS SITUATION WE DECIDED TO CHANGED MOST OF MY HUSBAND'S BILLIONS OF DOLLARS DEPOSITED IN SWISS BANK AND OTHER COUNTRIES INTO OTHER FORMS OF MONEY CODED FOR SAFE PURPOSE BECAUSE THE NEW HEAD OF STATE OF (DR) MR LAURENT KABILA HAS MADE ARRANGEMENT WITH THE SWISS GOVERNMENT AND OTHER EUROPEAN COUNTRIES TO FREEZE ALL MY LATE HUSBAND'S TREASURES DEPOSITED IN SOME EUROPEAN COUNTRIES.

HENCE MY CHILDREN AND I DECIDED LAYING LOW IN AFRICA TO STUDY THE SITUATION TILL WHEN THINGS GETS BETTER, LIKE NOW THAT PRESIDENT KABILA IS DEAD AND THE SON TAKING OVER (JOSEPH KABILA). ONE OF MY LATE HUSBAND'S CHATEAUX IN SOUTHERN FRANCE WAS CONFISCATED BY THE FRENCH GOVERNMENT, AND AS SUCH I HAD TO CHANGE MY IDENTITY SO THAT MY INVESTMENT WILL NOT BE TRACED AND CONFISCATED.

I HAVE DEPOSITED THE SUM OF EIGHTEEN MILLION UNITED STATE DOLLARS (US\$18,000,000,00) WITH A SECURITY COMPANY, FOR SAFEKEEPING. THE FUNDS ARE SECURITY CODED TO PREVENT THEM FROM KNOWING THE CONTENT IT HAD INSIDE.

WHAT I WANT YOU TO DO IS TO INDICATE YOUR INTEREST THAT YOU WILL ASSIST US BY RECEIVING THE MONEY ON OUR BEHALF. ACKNOWLEDGE THIS MESSAGE, SO THAT I CAN INTRODUCE YOU TO MY SON (KONGOLO) WHO HAS THE OUT MODALITIES FOR THE CLAIM OF THE SAID FUNDS. I WANT YOU TO ASSIST IN INVESTING THIS MONEY, BUT I WILL NOT WANT MY IDENTITY REVEALED. I WILL ALSO WANT TO BUY PROPERTIES AND STOCK IN MULTI-NATIONAL COMPANIES AND TO ENGAGE IN OTHER SAFE AND NON-SPECULATIVE INVESTMENTS.

MAY I AT THIS POINT EMPHASISE THE HIGH LEVEL OF CONFIDENTIALITY, WHICH THIS BUSINESS DEMANDS, AND HOPE YOU WILL NOT BETRAY THE TRUST AND CONFIDENCE, WHICH I REPOSE IN YOU. IN CONCLUSION, IF YOU WANT TO ASSIST US, MY SON SHALL PUT YOU IN THE PICTURE OF THE BUSINESS, TELL YOU WHERE THE FUNDS ARE CURRENTLY BEING MAINTAINED AND ALSO DISCUSS OTHER MODALITIES INCLUDING REMUNERATION FOR ALL THE SERVICES DONE.

FOR THIS REASON KINDLY FURNISH US YOUR CONTACT INFORMATION, THAT IS YOUR PERSONAL TELEPHONE AND EMAIL ADDRESS FOR CONFIDENTIAL PURPOSE AND ACKNOWLEDGE RECEIPT OF THIS MAIL USING THE ABOVE EMAIL ADDRESS.

BEST REGARDS,
MRS M. SESE SEKO

Atomic immediately forwarded Mrs M. Sese Seko the information that was requested. We have not received a reply and are deeply concerned for her well-being, and that of her dear sons, Dominic, Kongolo and Basher.

We're hoping that a new mouse will contribute in some valuable way to helping her redistribute US\$18 million (which is like, thirty-two million Australian dollars), but unless she emails us back, there's no way of arranging an exchange of goods.

POTM: How to post a question

www.atomicmpc.com.au/forum.asp?cat=te&top=68851

ni, who is a most knowledgeable and helpful Atomican, posts some helpful hints and tips on. . . how to post. The Tech areas of the *Atomic* forums are a busy place, with an extremely high chance that just about any question be solved. ni's suggestions for posting questions the right way should zap up efficiency, and of course, we really do love efficiency!

Good one ni - we hope you enjoy your funky new Logitech MX500 mouse.

Here is a small piece from the post:

'Firstly, the Topic Title.

The topic title plays a large part in determining who will read your post.

Making me (or anyone else) not read a post is just as good as getting someone to read a post.

Because I haven't wasted time loading a thread, it means I can spend more time reading and answering threads that fall into my lines of knowledge.

When everyone uses accurate topic titles, everyone benefits.'

They provide sound – pure, powerful and articulate sound. The companies responsible for these booty-shakin' pieces of kit take the money they don't spend on gimmicky features and direct it into buying serious digital-to-analog converters from the likes of AKM and Burr-Brown; the same converters found in quality British and Japanese CD players.

Even AOpen's sexy looking tube pre-amp can't compensate for the average sound produced by an AC97 (or Audigy) D/A converter. These beasts are general-purpose hardware for general-purpose users. High quality sound requires high quality gear every step of the way. Every Atomican worth their Jolt knows that top-end performance requires specialised top-end gear.

Who among us would slap a generic GeForce2 MX in a multi-GHz screamer and call it a job well done? Forget Sound Blaster cards and cheesy integrated audio. Hardcore sound calls for hardcore kit.

Toby McLaughlin

Qualified newbie

I have read the article 'Do you have a license for that Athlon' in *issue 21*, and I'd like to express my view on it.

Firstly, computer use SHOULD be a right, NOT a privilege.

PCs are made for personal use, and that is why it is called a PERSONAL computer. It is designed to be a machine that can be easily used by anyone and everyone; it is not a mainframe that needs high qualifications to operate.

Secondly, if you think people can do bad things on computers when they don't know their stuff, try those people who know a LOT about computers. Aren't they the ones making the viruses, cracking down firewalls and breaching security on your network? Don't tell me a newbie who has never touched a PC before could bring down a hardware firewall.

Same with driving a car, if you're never allowed to buy a car and try to drive it, you will never learn. And if everyone has to get a license to browse the Internet, to play some game over the network, or to design some art work with Photoshop (that doesn't have to be a PC pros job), then the PC would not have the market that it has today – it would be like UNIX – powerful and stable, but very unpopular.

Roger



Keeping abreast

Genetic engineering. Now there's an interesting topic. Easily as interesting as motorised false teeth or ABC Radio. And just like ABC Radio, nobody knows what will happen when it finally goes commercial.

Will we be buying bowling ball-sized tomatoes? Will trees grow into predetermined shapes – the Opera House or Salman Rushdie, for example? These questions and more came to me while flicking between Halo and a show on SBS (coincidentally about genetic engineering). The British host was explaining the possibilities of GE, with one stand-out example: breeding dolphins with hands instead of flippers.

'Why would a dolphin need hands?' I wondered. Fortunately, the program responded with some funky computer-generated imagery, illustrating a dolphin planting explosives on a ship (oh, of course! They were French dolphins). Satisfied, I flipped back to Halo.

Then it hit me: Master Chief – the guy I control, who frags aliens and drives his Warthog like Colin McRae on caffeine – is genetically engineered. His speed, strength and sense of importance are all artificially enhanced. Mind you, his aim is pretty crappy (my dodgy right thumb) and he keeps running over his Marine buddies. But this guy is really, really good. Like Universal Soldier, but with a better script.

I had my answer: genetic engineering is good because it can make us superhuman.

Cool. I know I sure could use some superspeed catching the tram in the morning, and some superagility to help negotiate the lid off my Starbucks morning brew. Superbreath would clear the dust out of my keyboard. And supervision would let me set my monitor to the highest possible resolution.

Hmmm. To be honest, I'm reaching here. There are few situations in our everyday lives that would really require super abilities. I could just as easily catch that tram if they moved the stop closer to my house. And I wouldn't spill my coffee if I didn't drink it like a secret agent (shaken – not stirred).

Is genetically engineering people pointless? I consulted 'she who has the final say on most things' about this. She said I was missing the point completely. Apparently women aren't interested in giving themselves super powers. They just want to make the small things they have bigger, and the big things they have smaller. Through the course of our conversation I counted the word 'cellulite' twenty-six times; the word 'buttocks' fifteen times; and the word 'boobjob' once, simply because I blocked it out the other thirty-two times (most guys see melons – I see second mortgage).

Perhaps the most sensible things I heard were: if they can make margarine that lowers cholesterol, why can't they make bacon that lowers bodyfat? Why can't they sell cereal that adds fat, but only to specific body areas?

And can't they make the fat go to the top bit, but not the bottom?

Strangely, this made a lot of sense.

Of course, like all 'why didn't I think of that' ideas, there are some inherent flaws. What happens if a guy accidentally eats the chest-enlarging Corn Flakes? Does he skip work and shop for lingerie? Would there be an 'adults only' section in the supermarket? Would old people need to be supervised when buying All Bran, in case they bought All Breast by mistake?

Sure, there's no guarantee this technology won't be abused. Like all genetic engineering, the results of this breast-enlarging food would have to be carefully watched and recorded. And now that I've determined my future job, I'll leave you with some sobering thoughts. . .

The year is 2050. You come home from a hard day at the cereal factory, leaping five stories up to your apartment and waving at the neighbour's dolphin – which waves back. You offer to cook dinner, but discover that a tree, shaped like Madonna, has broken the gas main. Instead, you use your heat vision to fry a single tomato (enough to feed a family of twelve). You finish the evening watching reruns of early 21st century TV programs about genetic engineering (what a laugh!) nestled comfortably into the beanbag that is your wife's bosom.

GE – it's more appealing than you think.

John Simpson

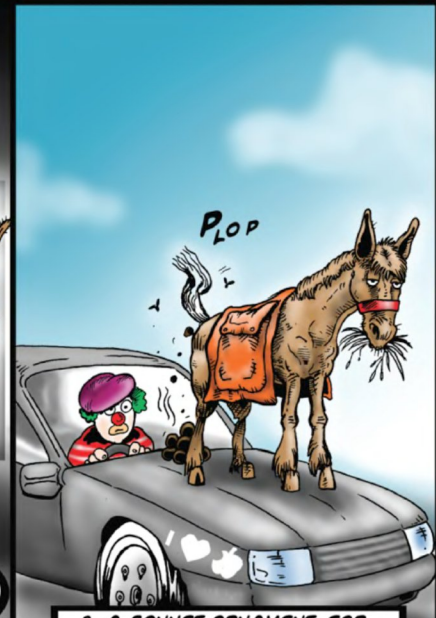


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